

**STANDARD CONSTRUCTION
AND
MATERIAL SPECIFICATIONS
FOR
PUBLIC IMPROVEMENTS**

**EAST COVENTRY TOWNSHIP
855 Ellis Woods Road
Pottstown, PA 19465**

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SECTION 1 GENERAL CONDITIONS

1.1 Scope

- A. These Standard Construction and Material Specifications for Public Improvements (hereinafter referred to as "Public Improvements Specifications") supplement the East Coventry Township Subdivision and Land Development Ordinance, and all other ordinances and regulations of East Coventry Township that pertain to the construction of the types of improvements regulated by these Public Improvements Specifications.
- B. All work shall be executed in a workmanlike manner by qualified, careful, and experienced professionals and laborers.
- C. For construction associated with a land development project, the Developer is the party who is ultimately accountable to the Township for all work and responsible for all work regardless if the work is performed by the Developer's Consultant or Contractor. This condition is implied throughout these Public Improvements Specifications.

1.2 Definitions

- A. The following definitions shall be applicable in this document:
 - 1. *Commonwealth*: The Commonwealth of Pennsylvania. This term may also be referred to as "State."
 - 2. *Consultant*: Any individual, partnership, or corporation providing consulting services to the Extender.
 - 3. *Contractor*: Any individual, partnership, or corporation performing construction work for the Extender in the case of private construction, or for the Township in the case of contracts awarded by the Township.
 - 4. *Construction Drawings*: Those drawings prepared by or on behalf of the Extender or by a Township consultant and approved by the Township to show the detailed design of the specific project including plan layout and design details.
 - 5. *Developer*: Any equitable owner, landowner, agent of such landowner, or tenant with the permission of such landowner, who makes or who causes to make a subdivision of land and/or a land development, or who constructs Public Improvements or causes Public Improvements to be constructed.

6. *Engineer*: The appointed Engineer that represents the Township. The term may also include a construction observer employed by the Engineer.
7. *Extender*: Shall mean the Developer and/or the Contractor.
8. *Land Development*: Activity as defined in the Township's Subdivision and Land Development Ordinance, as amended.
9. *Or Equal*: Equality of equipment or products versus those specified, as determined by and at the sole discretion of the Engineer. The term may also be referred to as "or approved equal."
10. *PADEP*: The Department of Environmental Protection of the Commonwealth of Pennsylvania.
11. *PADOT*: The Department of Transportation of the Commonwealth of Pennsylvania.
12. *Professional Engineer*: An individual licensed and registered under the laws of the Commonwealth of Pennsylvania to engage in the practice of engineering.
13. *Professional Land Surveyor*: An individual licensed and registered under the laws of the Commonwealth of Pennsylvania to engage in the practice of land surveying.
14. *Public Improvements*: Those facilities that are designed for and available to the public, which may be offered for dedication including, but not limited to, streets, storm drainage facilities, sidewalks and utilities.
15. *Standard Details*: Those details that have been prepared by the Engineer and approved by the Township, and are included in Appendix 1 of these Public Improvements Specifications to show general and typical construction requirements.
16. *Street*: As defined in the Township's Subdivision and Land Development Ordinance, as amended. The term may also be referred to as "road."
17. *Subdivision*: The division or redivision of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels, or other divisions of land.
18. *Township*: Township of East Coventry, Chester County, Pennsylvania.
19. *Work*: Labor, services, materials, and equipment as required for the successful completion of the project.

1.3 Fittings and Coordination of Work

The Extender shall be responsible for the proper fitting of all work and for the coordination of the operations of all trades, subcontractors, and persons delivering materials engaged upon this project. The Extender shall be prepared to guarantee to each of his subcontractors the locations and measurements that may be required for the fitting of their work to all surrounding work.

1.4 Superintendence by Extender

At all times during which work is being performed under or affecting the project, the Extender shall keep a competent superintendent acceptable to the Township on the site from the commencement of work until the completion thereof, who shall be continuously in touch with work and in all interlocking contracts affected thereby. The superintendent shall, in the absence of the Extender, see that the instructions of the Engineer are carried out and all directions given such superintendent shall be as binding as if given to the Extender.

The Extender shall have available at all times, including non-working hours, weekends, and holidays, an emergency maintenance crew and a person of authority and responsibility to act in cases of emergency, such as flooding, cave-ins, or other unsafe conditions, resulting from construction activities. The Extender shall submit to the Township all the names, addresses and telephone numbers of the emergency crew supervisor(s) prior to beginning construction operations. The Extender shall be responsible for costs resulting from such emergency work.

The Extender is responsible for all costs incurred for any emergency work performed by the Township or others on the Extender's behalf.

1.5 Permits, Licenses and Taxes

The Extender shall give all notice required by and comply with all applicable laws, ordinances, and codes of the Township. All construction work and/or utility installations shall comply with all applicable ordinances and codes, including all written waivers. Prior to commencing construction, the Extender shall examine the Public Improvements Specifications for compliance with applicable ordinances and codes and shall immediately report any discrepancy to the Township. Where the requirements of the Public Improvements Specifications fail to comply with such applicable ordinances or codes, the Township may adjust the Public Improvements Specifications to conform to such ordinances or codes (unless waivers in writing covering the difference have been granted by the governing body or department). Should the Extender fail to observe the foregoing provisions and proceed with construction varying with any applicable ordinance or code, including any written waivers (notwithstanding the fact that such installation is in compliance with the Public Improvements Specifications) the Extender shall correct such work without cost to the Township.

The Extender shall, at the Extender's own expense, secure all required permits,

certifications and approvals, and pay to the appropriate regulatory agencies the fees or charges for same. Proof of all required permits, certifications and approvals shall be provided to the Township as well as compliance with the utility notification requirements of Pennsylvania Act No. 181 of 2006. Construction may not commence until all permits and approvals are obtained. All permit applications shall be made by the Extender and shall be under the Extender's signature. The developer's engineer shall provide a list, which shall be approved by the Township Engineer, of all required permits prior to the preconstruction conference.

Any and all Township applications and/or permit fees shall be paid at the time of application and shall be in the amount as established by resolution of the Board of Supervisors in effect at the time of application. No Township permit will be waived for the Extender.

Developer and/or contractor shall receive written authorization to proceed from the Township Manager prior to the start of construction or any earthmoving activity.

Whenever the proposed construction requires sales, consumer's use, or other similar tax, the Extender shall pay for same.

1.6 Protection of Work and Property

The Extender shall provide adequate protection against injury or loss arising in connection with the project for all his work and the property of the Township. The Extender shall make good any such damage, injury or loss. The Extender shall adequately protect adjacent property as provided by law. The Extender shall provide facilities for protection required by public authority or local conditions such as passageways, guard fences, lights, etc.

The Extender shall preserve and protect all trees, shrubs and grass on or adjacent to the site which do not reasonably interfere with the construction as may be determined by the Township or Engineer, and the Extender shall be responsible for all unauthorized cutting or damaging of trees and shrubs, including damage due to careless operation of equipment, stockpiling of materials or tracking of grass areas by equipment. The Extender shall remove only those trees designated by the Engineer to be removed.

1.7 Traffic Control and Safety

Work being performed in/on any Township streets and rights-of-way, shall require a Road Occupancy Permit from the Township and posting of a performance bond, if required by the Board of Supervisors. All traffic control and safety protection methods, devices and procedures for work in Township streets shall be in conformance with PADOT Publication 203, Work Zone Traffic Control, current edition.

The Extender shall perform the work in such a manner as to interfere as little as possible with the use of intersecting roads or adjoining properties. No excavation shall be left

open or other obstruction allowed to remain longer than is absolutely necessary; and the Extender shall provide all safeguards and temporary passageways that may be necessary for the convenience and protection of all persons using said property either day or night.

It shall be the duty of the Extender, at all times, to maintain crossings, walks, sidewalks, and streets open to traffic and in a satisfactory condition, and to keep all fire hydrants, valves, fire alarm boxes, and letter boxes accessible. For trenches, a timber bridge at least three feet in width and equipped with side railings shall be provided. When the excavated material will encroach upon sidewalks or private property, planking shall be placed in order to keep the sidewalk or private property clear of excavated material.

No Township street shall be blocked for traffic for longer than one (1) hour in any direction unless approved in writing by the Township. There shall be no lane restrictions in Township Streets or State Highways between the hours of 6:00 am and 9:00 am, and between the hours of 3:00 pm and 6:00 pm.

Written approval from the Township is required for all proposed road detours within the Township borders.

1.8 Shop Drawings

The Extender shall check and verify all field measurements and shall submit with such promptness as to cause no delay in the Extender's own work, a minimum of three (3) sets plus however many sets the Extender wishes to have returned, checked and approved by the Extender, of all shop or setting drawings and schedules required for the work of the various trades. The Engineer shall review, with reasonable promptness, such schedules and drawings for compliance with the information given in the Public Improvements Specifications. The Extender shall make all corrections required by the Engineer, and shall resubmit shop drawings until deemed approved by the Engineer. The Engineer's approval of such drawings or schedules shall not relieve the Extender from responsibility for deviations from the Public Improvements Specifications, unless the Extender has in writing called the Engineer's attention to such deviations at the time of submission, and secured the Engineer's written approval, nor shall it relieve the Extender from responsibility for errors in shop drawings or schedules.

1.9 Use of Premises

The Extender shall confine his equipment, storage of materials, and construction operations to the Project Limits as prescribed by ordinances or permits, or as may be directed by the Township, and shall not unreasonably encumber the site or public rights of way with his materials and construction equipment.

The Extender shall comply with all reasonable instructions of the Township and the ordinances and codes of the local government regarding signs, advertising, traffic, fires, explosives, danger signals, and barricades. PADOT flagging shall be required for all work on existing roads within the Township without exception.

1.10 Materials and Workmanship

Unless otherwise specifically provided, all workmanship, equipment, materials and articles incorporated in the work shall be new and the best grade of the respective kinds of their purpose. Where equipment, materials, articles, or workmanship are referred to in the Public Improvements Specifications as “or equal” or “or approved equal”, the Engineer shall decide the question of equality.

Materials specified by reference to the number or symbols of a specific standard, such as an A.S.T.M. Specification, a Federal Specification or other similar standard, shall comply with the requirements in the latest revision thereof and any amendment or supplement thereto except as limited to type, class or grade, or modified in such reference. The standards referred to, except as modified in the Public Improvements Specifications, shall have full force and effect as though printed herein.

1.11 Samples, Certificates and Tests

The Extender shall submit all material or equipment samples, certificates, affidavits, etc., as required in the Public Improvements Specifications or required by the Engineer, promptly. No such materials or equipment shall be manufactured or delivered to the site, except at the Extender's own risk, until the Engineer has approved the required samples or certificates in writing. Each sample submitted by the Extender shall carry a label giving the name of the Extender, the project for which it is intended, and the name of the producer. The accompanying certificates or letter from the Extender shall state that the sample complies with the Public Improvements Specifications, shall give the name and brand of the product, its place of origin, the name and address of the producer and all specifications or other detailed information which will assist the Engineer in passing upon the acceptability of the sample promptly. It shall also include a statement that all materials or equipment furnished for use in the project, will comply with the samples and/or certified statements.

After actual deliveries, the Engineer will have such check tests made as he deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories, which fail to meet check tests, have been incorporated in the work, the Engineer will have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Extender as is equitable.

1.12 Changes in Equipment and/or Materials

In these Public Improvements Specifications and on accompanying drawings, there are specified and shown certain pieces of equipment and/or materials which are deemed most suitable for service anticipated. This is not done to eliminate other equipment and material equally as good and efficient. Should Extender desire to use some other make of

equipment or material, he shall submit to the Engineer a written request for such change and in same shall state advantage to the Township. Determination as to whether or not such change will be permitted rests solely with the Engineer.

1.13 Warranty of Title

No material, supplies, or equipment for the work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Extender shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances, constructed or placed thereon by him to the Township free from any claim, liens, or charges. Neither the Extender nor any person, firm or corporation furnishing any material or labor for any work shall have the right to a lien upon any improvement or appurtenance thereon.

1.14 The Township's Right to Do Work

If the Extender should neglect to prosecute the work properly, the Township may, without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the Extender's escrow funds.

1.15 Engineer's Status

The Engineer shall be the Township's representative during the construction period. The Engineer will make visits to the site, at a frequency commensurate with the work being performed, to be generally familiarized with the progress and quality of the work and to determine in general if the work is proceeding in accordance with the Public Improvements Specifications. The Engineer will not be responsible for the Extender's failure to carry out the construction work in accordance with the Public Improvements Specifications and Construction Drawings. During such visits and on the basis of observations while at the site, the Engineer will keep the Township informed of the progress of the work of Extender, and may condemn work as failure to adhere to the Public Improvements Specifications and/or Construction Drawings. The Engineer shall have authority to reject the work whenever such rejection may be necessary in his reasonable opinion to insure the proper completion of the project.

1.16 Safety and Health Regulations (OSHA)

The Developer and Contractor are responsible to and shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL-91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL-91-54). All work must be in compliance with State and Federal occupational health and safety regulations. Neither the Engineer nor the Township is responsible for enforcement of OSHA regulations.

1.17 Location of Utilities

The Extender will be held responsible for locating, in advance of the facilities to be built under this contract, all underground structures, such as water and gas mains; water and gas services; storm sewers and telephone and electric conduits, etc., which may be encountered during the constructing operation. He shall either dig test holes to determine the position of the underground structures, or he shall arrange with the Owners of such underground structures to assign a representative to mark the locations.

The existence and location of underground utilities as indicated on any plans of the Township are presented merely to serve as a notification that such utilities do exist in the general proximity of the work. Any utilities not shown, or not located as shown, shall not be cause of the Extender to deny responsibility for their protection and/or repair during construction.

- A. The Extender shall notify all utility companies in advance of construction to include requesting the utilities to be located in accordance with Pennsylvania Act No. 181 of 2006, and cooperate with agents of these companies during the progress of the work. During the course of his work, if the Extender damages any of the aforementioned utilities, the Extender shall immediately follow the procedure of emergency action and repair as established at the Extender's own expense.
- B. Whenever the Extender, during the progress of the excavation, uncovers service pipes or lines, which because of injury or age are in poor condition, the Extender shall immediately notify the proper authority in order that steps may be taken for replacement or repair. Locations of repairs, and the procedures of repairs that have been made shall be documented by the Extender.
- C. The Extender shall sustain in their places and protect from direct or indirect injury, all pipes, conduits, tracts, walls, Buildings, and other structures or property in the vicinity of his work, whether above or below the ground, or that may appear in the trench.

1.18 Observation of Work

The Township and/or Engineer may appoint such person(s) as they deem necessary to observe, at any time, materials and equipment furnished and work done. The Engineer shall be provided at least three (3) business days notice of the time and place of all work performed in sufficient time to allow arrangements for the assignment of construction observers. Neither the surveillance of the work, nor the presence or absence of a construction observer shall relieve the Extender of any of his obligations of making his work conform to the intent of the Public Improvements Specifications and Construction Drawings. The Township's construction observers shall be authorized to observe all work done and materials furnished. Such inspection may extend to all or any part of the work and to the preparation or manufacture of the materials to be used. Construction observers will be stationed on the work to report to the Engineer as to the progress of the work and the manner in which it is being performed; to report whenever it appears that

the materials furnished and work performed by the Extender fail to fulfill the requirements of the Public Improvements Specifications, and to call to the attention of the Extender any such failure or other default, but no surveillance or any failure to observe, at any time or place, shall relieve the Extender from any obligation to perform all work strictly in accordance with the requirements of the Public Improvements Specifications. In case of any dispute arising between the Extender and any construction observer as to materials furnished or the manner of performing the work, the construction observer shall have the authority to reject materials or suspend the work until the question at issue can be referred to and decided on by the Engineer. The construction observers shall not be authorized to revoke, alter, enlarge, relax or release any requirements of the Public Improvements Specifications, nor to approve or accept any portion of work, or to issue instructions contrary to the Public Improvements Specifications. Construction observers shall in no case act as foreman or perform other duties for the Extender, nor interfere with the management of the work by the latter. Any instructions that the construction observers may give the Extender shall in no way be construed as releasing the Extender from fulfilling the terms of the Public Improvements Specifications.

1.19 Use of Explosives

The use of mechanical surface impact equipment or drilling and hydraulic rock splitting equipment to remove rock shall be employed by the Extender to the greatest extent possible. If no other means of rock removal are viable, the Extender may employ the use of the explosives method (blasting).

Extender shall take complete responsibility for rock removal by the explosives method including any and all damages or injuries resulting from blasting operations. Blasting shall not be permitted within a radius of 200 feet from any structure or building, or within a 300-foot radius from any gas pipeline, and in no case closer to any gas pipeline than is permitted by the gas utility company.

1.20 Lines, Grades and Construction Surveying

The Extender shall be responsible for the stakeout for the construction of the project. The Extender shall provide all surveying required to layout the construction work from horizontal and vertical reference points. The Extender shall provide all engineering personnel, materials, equipment and labor required to stakeout the baselines and/or centerlines and all offset lines and grades.

On jobs where the Extender intends to use a laser he shall either provide offset stakes at a minimum of 100' intervals and use them to spot check his grades, or provide a level, rod and level operator to spot check his grades.

1.21 Standard Details

The Standard Details located in Appendix 1 of these Public Improvements Specifications are incorporated herein by reference.

1.22 As-Built Plans

Following completion of the work, the Extender shall furnish the Township with As-Built Plans in accordance with the As-Built Plan Requirements identified in Appendix 2 of these Public Improvements Specifications.

1.23 Preconstruction Conference

A preconstruction conference shall be required for all subdivision and/or land development projects where financial security has been posted for improvements, and for any other construction or earthmoving activities when deemed necessary by the Township or Engineer. The Extender or his representative and the contractor or contractors who will be performing the work shall attend, along with the Township Engineer and Township representatives. A representative of Chester County Conservation District shall be invited, and any other interested reviewing agencies and/or utilities may attend. The developer shall be responsible for arranging the meeting. A typical preconstruction conference agenda is included in Appendix 3. The Extender shall deliver two (2) sets of full size and three (3) sets of reduced size (11" x 17") final subdivision and/or land development plans, as approved by the Board of Supervisors, to the Township Engineer at the preconstruction conference for the Township Engineer's use during construction.

1.24 Soil Erosion and Sedimentation Pollution Control

The Township is located in a specially protected high quality or exceptional value watershed. As such, extreme care should be exercised in all disturbance activities to prevent degradation to the Waters of the Commonwealth, and upon completion or temporary cessation of earth disturbance activities, the project site shall be immediately stabilized with the appropriate temporary or permanent stabilization. Slopes greater than 3:1 shall utilize erosion control blanket stabilization.

1.25 Inspections

- A. Inspections shall be performed by the Engineer, unless stated otherwise herein, to verify that proper procedures and methods of installation of all approved structures and approved materials required to be installed are followed. Unless other arrangements are made with the Board of Supervisors, all costs associated with the inspections will be the responsibility of the Extender.
- B. Inspections shall be required prior to starting construction, during the installation of materials and structures, and upon the completion of all improvements. All improvements shall be installed in accordance with all required approved regulations and specifications.
- C. Any and all unsatisfactory work, faulty procedures and methods, and defective materials that have been installed shall be rejected and noted for the record on the

inspection standards punchlist and shall be corrected before final acceptance.

- D. The replacement of all required improvements shall be in accordance with the controls set by a Professional Land Surveyor registered in the Commonwealth of Pennsylvania, to ensure installation of improvements to proper location, elevation, alignment and profile.
- E. Improvements requiring inspection include, but are not limited, to the following:
1. Sanitary Sewer System: Prior to the start of any sanitary sewer improvements work, the Extender shall notify the Engineer as previously described.
 2. Water Distribution System: Inspection of all water distribution system improvements is the responsibility of the water utility company serving and with franchise rights in the subject area. However, all water distribution lines installed in Township streets will be inspected by the Engineer with regard to trenching, backfill, compaction and surface restoration. Prior to the start of any work on the water line improvements, the Extender shall notify the Engineer as previously described, and shall also contact the water utility company and adhere to the water utility company's policies, procedures and standards.
 3. Storm Drainage System: Storm drainage improvements shall require visual inspection of each section. Prior to the start of any storm drainage improvements, the developer and/or contractor shall notify the Township as previously described. Inspections shall be made prior to backfilling any section, including pipes, inlets, manholes, endwalls, detention and retention basins, culverts and bridges, and all items being installed as part of the storm drainage system. Cast in place concrete structures and bridge structures shall require material samples, in compliance with ASTM C39 standards. Samples must be taken in the presence of the Township's authorized representative.
 4. Street System: Inspection of road subgrade, aggregate subbase, base course, binder course and wearing course, including review of all delivery slips.
 5. Curb Structure: Inspection of subgrade, general alignment and any forms to be used. String line shall be set prior to any concrete pour to show line and grade, profile and alignment. Material inspection, including the submittal of all certified material delivery slips.
 6. Sidewalk: Inspection of subbase grade and form grade and alignment prior to any pour. Material inspection, including the submittal of all certified material delivery slips.
 7. Grading and Seeding/Sodding: Inspection as required to assure compliance with approved plans, regulations and general acceptable methods and practice.

8. Emergency Access Drive: Inspection of subgrade and any required geotextile overlay, subbase, and porous paving system.
9. Driveway: Inspection by Township's Driveway Permit Officer of materials, grades, and separation distances, except for driveways associated with multi-family units, which shall be inspected by the Engineer.

SECTION 2 STREET DESIGN AND CONSTRUCTION

2.1 General Requirements

- A. All construction materials, means and methods for Township streets shall be in accordance with the applicable requirements of PADOT Publication 408, latest revision thereof, and materials shall be supplied by vendors approved by the PADOT for the supply of such materials. Inspection of materials and construction methods shall be in accordance with the requirements set forth herein as well as the Township's Subdivision and Land Development Ordinance, as amended.
- B. Street cross-sections and construction shall be as shown in the Standard Details.
- C. Paving design is based on overall soil conditions in the Township. The Board of Supervisors may require additional paving, base or subbase materials where soil types are inferior, wet or otherwise unsuitable as indicated by the "Soil Survey of Chester and Delaware Counties, Pennsylvania" prepared by the U.S. Soil Conservation Service or where, in the opinion of the Township Engineer, such conditions exist.

2.2 Subgrade

- A. The area within the limits of the proposed road surface shall be shaped to conform to the line, grade and cross-section of the proposed road.
- B. Remove or stabilize all unsuitable subgrade materials.
- C. Wet or swampy areas shall be permanently drained and stabilized, as permitted by the regulatory agency having jurisdiction.
- D. Fills shall be made with suitable materials approved by the Township Engineer and thoroughly compacted for full width in uniform layers of not more than eight (8) inches thick. No more than two (2) feet of fill shall be laid between inspections by the Township Engineer.
- E. The subgrade shall be thoroughly compacted by rolling with a minimum ten-ton three-wheel roller. Equivalent vibratory sheepsfoot or rubber-tired rollers may be used at the discretion of the Township Engineer. Subgrade shall be compacted, tight and dry, to ninety-five (95) percent compaction at optimum moisture and shall not be soft and spongy under the roller. Compaction of the subgrade shall extend the full width of the cartway, including the width to be occupied by shoulders. Compaction tests meeting ASTM or ASHA standards are required in virgin soil at maximum five hundred (500) foot intervals, unless otherwise approved by the Township Engineer, and at any other specific locations designated by the Township Engineer. The developer and/or contractor shall obtain the services of a third-party certified materials testing firm to perform the tests, and the results shall be signed and sealed by a Professional Engineer registered in the Commonwealth of Pennsylvania and shall be submitted to the Township Engineer. Any location not meeting the compaction

requirements shall be removed or re-rolled, and retested, until suitable compaction is achieved.

- F. In fill areas compaction tests meeting ASTM or ASHA standards are required for each three (3) feet of fill thickness. The tests shall be conducted in each eight (8) inch layer at one hundred fifty (150) foot intervals. The developer and/or contractor shall obtain the services of a third-party certified materials testing firm to perform the tests, and the results shall be signed and sealed by a Professional Engineer registered in the Commonwealth of Pennsylvania and shall be submitted to the Township Engineer. All compaction must be ninety-five (95) percent compaction at optimum moisture. Any layer not meeting the compaction requirements shall be removed or re-rolled, and retested, until suitable compaction is achieved.
- G. As an alternate to the compaction and testing requirements described above, the subgrade may be proof-rolled. Proof rolling shall consist of several passes of a smooth drum vibratory compactor that is capable of imparting a total (static plus dynamic) drum force of not less than 550 lb. per linear inch of drum width. It may be necessary to operate the equipment in the static mode if the groundwater level is close to the subgrade elevation. Should any unsuitable areas be detected by the proof rolling that can not be stabilized by additional passes of the equipment, said material shall be undercut and replaced with compacted aggregate fill. The determination of what, if any, areas are unsuitable is at the sole discretion of the Engineer. Any unsuitable areas, as determined by the Engineer, shall be repaired to the satisfaction of the Engineer prior to subbase installation.

2.3 Subbase

- A. This work shall consist of constructing a layer or layers of compacted aggregate on a prepared subgrade area.
- B. The subbase material shall be PADOT No. 2A compacted coarse aggregate.
- C. The construction methods for the subbase shall conform to the requirements as specified in Section 350.3 of PADOT Publication 408, latest edition.
- D. If at the time of construction, local unstable subgrade conditions are encountered, the Township Engineer may require that all areas of unstable subgrade be excavated to sufficient depth, replaced with approved material and compacted to a density and stability equal to or greater than the surrounding subgrade.
- E. The subbase course shall be installed and compacted in accordance with PADOT specifications and shall extend thirty six (36) inches on all streets beyond the paving line when curbs are not to be installed.

2.4 Paving

- A. Paving and base thickness and materials shall be as shown in the Standard Details.
- B. Bituminous base, binder and surface courses shall be laid to the specified thickness, measured after compaction. All bituminous courses shall be laid with a mechanical bituminous paver in accordance with specifications of the PADOT Specifications, Publication 408, latest edition thereof.
- C. Crown board and straight edge shall be used for checking street construction. Maximum tolerance shall not exceed one-quarter (1/4) inch in the finished surface.
- D. Delivery slips for all material deliveries shall be furnished to the Township Engineer.
- E. Failure to adhere to the above specifications shall give the Board of Supervisors cause to refuse to accept streets for dedication.
- F. Prior to application of additional bituminous courses, existing base courses shall be inspected by the Township representative for defects such as fracture, racking or other signs of base failure, or potential failure. All areas of failure, or potential failure, shall be removed by saw cutting, and replaced, or repaired, to the satisfaction of the Township representative.
- G. Weather Limitations: Bituminous paving shall not be placed between October 31 and April 1, unless otherwise permitted in writing by the Township Engineer. Bituminous paving shall not be placed when surfaces are wet or when the temperature of either the air or the surface on which the paving is to be placed is 40°F or lower.

2.5 Grading and Shoulders

Roadways shall be graded for the full width of the right of way on each side. Paved shoulders shall be graded at a slope of three quarters (3/4) of an inch per foot. Earthen shoulders shall be graded with a minimum slope of one-half (1/2) inch per foot and a maximum slope of one (1) inch per foot. Beyond the limits of this grading, banks shall be sloped to prevent erosion but this slope shall not be greater than three (3) horizontal to one (1) vertical with tops of slope in cuts rounded. All unpaved areas between the street line and the curb or shoulders (as the case may be) shall be covered with not less than four (4) inches of topsoil, fertilized and seeded in a manner and with materials specified in Section 804 of PADOT Publication 408, latest edition thereof.

2.6 Joints

Joints formed by binder or wearing course laid adjacent to concrete curbs or other rigid structures shall be sealed with PG 64-22 conforming to PADOT Bulletin 25, or approved equal, minimum twelve inch (12") width unless directed otherwise by the Township Engineer.

SECTION 3 STREET EXCAVATION

3.1 General

No hole shall be drilled and no opening or excavation shall be made in any existing Township street without first having obtained a road occupancy permit for such from the Township.

3.2 Execution

- A. During the progress of the work, the holder of the permit shall provide and maintain such fences, barriers, "street closed" and warning signs, yellow lights and other danger signals, and watchmen as may be necessary to prevent accidents to the public, pursuant to and in compliance with the standards established by the PADOT as set forth in Title 67, Pennsylvania Code, Chapter 203, as may be amended or supplemented from time to time.
- B. The amount of trench opened, and also the amount unfilled at the conclusion of the workday, if any, shall at all times be subject to the decision of the Township Engineer.
- C. Before initiation of the work, the permit holder shall notify the Township Road Superintendent and Engineer to allow for the supervision and inspection of the backfill and restoration.
- D. All openings or excavations of streets, excepting drill holes, shall be cut with a power saw and not with an air jackhammer or similar devices.
- E. Any person opening or excavating any street shall, upon completion of the project and after notification of the Township, immediately and completely backfill such openings or excavations, mechanically tamping the same so as to prevent any settling thereof prior to the expiration of the permit, shall restore the surface to the same condition as it was prior to construction, and shall remove from the site of work all debris, tools and equipment.
- F. All backfilling and restoration shall be done in strict conformance with the Standard Details for backfilling and restoration.
- G. Compaction tests of the street subgrade shall be performed when and where directed by the Engineer in accordance with the procedure and requirements previously described for street subgrade.
- H. Where test holes have been drilled, they shall be filled with asphalt and sealed with hot tar.

- I. Permanent restoration. Backfilling of any opening and/or excavations shall be as follows:
1. Before completing the backfilling of any trench, a saw cut shall extend a minimum of twelve inches (12") beyond the trench opening on all sides of the excavation.
 2. Initial backfill shall consist of a bed of 2B clean aggregate (AASHTO No. 57) six inches (6") under the utility conduit extending to twelve inches (12") above the top of the conduit.
 3. Final Backfill:
 - a. PADOT 2A (Township street) or 2RC (State road) coarse aggregate mechanically tamped in six-inch (6") intervals to restoration depth; or
 - b. Suitable excavated material backfilled by hand or by approved mechanical methods (new Township street only). Backfill shall be excavated material approved by the Engineer and containing no stones larger than four (4) inches in maximum dimension. A maximum of 20% of the backfill volume may be stones if the stones are evenly distributed within the material. Excavated material shall be free of organic material, refuse, and frozen materials subject to limitations specified and shall be compacted in 4" loose lifts with mechanical tamper or 8" loose lifts if vibratory equipment is used.
 4. Bituminous concrete base course (BCBC), extending a minimum of twelve inches (12") on each side of the trench, shall be placed on top of the backfill. The Extender shall be held responsible for any settlement within one (1) year of the final restoration.
 5. Bituminous binder and wearing courses, properly compacted and graded to the surface of the street, shall be placed on top of the BCBC and sealed at the saw cut with an approved asphalt sealing material.
- J. Temporary restoration: During winter construction periods, the trench shall be backfilled as in the first three (3) items of the specifications for permanent restoration above. The final step shall be temporary application of bituminous stockpile mix to bring the trench to street grade. Inspection shall be made periodically to maintain the trench in condition satisfactory to the Township. On or before May 31st following the date the street cut was first made, the permittee shall permanently restore the cut as in paragraphs I.4 and I.5 of Section 3.2 above.

- K. Where street openings or excavations are done on a newly constructed street or a street repaved within three (3) years of the date of issuance of the road occupancy permit, the street shall be resurfaced with paving materials prescribed by the Township as follows:
1. Fifteen (15) feet on either side of the opening for lateral and angled street openings.
 2. Entire length of street opening plus fifteen (15) feet on each side and each end of street opening for longitudinal street openings.
- L. Where street openings or excavations are done on a street that has not been repaved within three (3) years of the date of issuance of the road occupancy permit, the street shall be resurfaced with paving materials prescribed by the Township as follows:
1. Five (5) feet on either side of the opening for lateral and angled street openings.
 2. Entire length of street opening plus five (5) feet on each side and each end of the street opening for longitudinal street openings.

SECTION 4 DRIVEWAYS

4.1 General

- A. All residential, commercial and industrial driveways accessing onto a highway, street, road or avenue shall require the issuance of a driveway permit before construction.
- B. Prior to construction of any residential, commercial or industrial driveway that accesses onto a Township highway, street, road or avenue, a driveway sketch and driveway profile plan, prepared in accordance with the Standard Details and Township Driveway Ordinance, shall be submitted to the Township for review and approval.
- C. Residential driveways shall be located, designed and constructed in accordance with the Township Driveway Ordinance.

4.2 Commercial and Industrial Driveways

- A. Commercial and industrial driveways shall meet the requirements of the Township Driveways Ordinance, except as modified below:
 - 1. Commercial and industrial driveways shall be designed to meet the requirements set forth in Chapter 441 of Title 67 of the Pennsylvania Code.
 - 2. Commercial and industrial driveways shall be paved with 1.5 inches of ID-2 wearing course, 4 ½ inches of bituminous concrete base course and 6 inches of PADOT No. 2A compacted coarse aggregate subbase.
 - 3. Commercial and industrial driveways shall be provided with a drainage pipe, as opposed to a swale, in the proximity of where the driveway intersects the street in accordance with the Standard Details.
 - 4. Commercial and industrial driveways shall be provided with curb returns of appropriate radius in accordance with PADOT Standards, rather than depressed curbs.
 - 5. Commercial and industrial driveways shall be constructed with a two (2) percent minimum crown or cross slope.
 - 6. Commercial and industrial driveways shall have minimum radii of 60 feet.

SECTION 5 CURBS AND SIDEWALKS

5.1 General

- A. The construction of any new curbs or sidewalks and the repairing of any existing curbs or sidewalks in the Township shall be in conformance with the following specifications, and as shown in the Standard Details.
- B. The grade to which every curb, gutter, or sidewalk shall be hereafter laid, constructed or repaired, other than that established in an approved subdivision and land development plan, shall be that fixed and designated by the Engineer. When required by the Engineer, grade cut sheets for the curb or sidewalk shall be provided for review prior to the installation of the structure.
- C. All new street trees shall be planted on the residence side of the sidewalk at a distance of at least two feet (2') outside of the ultimate right-of-way, unless specified otherwise elsewhere, in which case the greatest distance shall apply.
- D. No open gutters for conducting rainwater or drainage of any kind will be permitted to run over the top of curbs or sidewalks. All underground rain conductors shall be of pipe material such as cast iron, wrought iron, or approved plastics, and shall be connected directly to a storm sewer pipe.
- E. No persons or person, firm or corporation shall construct or repair any curb, sidewalk, or gutters within the public right-of-way without first applying for and obtaining a permit for the same from the Township. No permit will be required for new curbing, gutters or sidewalk to be constructed in an approved subdivision and/or land development, which is to be installed by the Extender.

5.2 Curbs

- A. Curbs shall be installed along both sides of all proposed streets and shall be the vertical type. Curbs shall always be required where sidewalks are required.
- B. Grass swales may be permitted, in lieu of curbs, within rights-of-way of developments of less than 10 lots, subject to the approval of the Township; however, all subdivisions or land developments with lots of one (1) acre or less shall provide curbs.
- C. Curbs shall be provided in all new parking areas located within a land development.
- D. All curbs shall be constructed of monolithic concrete. Such concrete shall develop a compressive strength of 3,500 pounds per square inch (psi) in twenty-eight (28) days. Certification of the concrete mix shall be provided to the Township.
- E. Curbs shall have clean cut joints, a minimum of two (2) inches deep, every ten (10) linear feet and expansion joints every sixty (60) linear feet or less, at structures, and at

the end of each day's work. Expansion joints shall be one half (1/2) inch in width with pre-molded expansion joint filler. Expansion joint material shall also be placed between any curb and concrete driveway apron.

- F. All curbs shall have a depth of not less than eighteen (18) inches and shall be eight (8) inches in thickness at the base and seven (7) inches in thickness at the top. Curbs shall be constructed with an eight (8) inch reveal and shall rest on a compacted bed of AASHTO No. 57 (PADOT 2B) crushed stone of a depth of not less than four (4) inches.
- G. When a curved curb joins with a tangent curb, at curb returns, on sharp curves, where a curb is jointed to an inlet, and elsewhere as directed by the Township, there shall be embedded in the concrete two (2) #4 reinforcing bars twenty-four (24) inches long. These bars shall extend twelve (12) inches into the curb on each side of the joint. The portion of the bar extending into the tangent curb shall be rendered bondless by a coating of approved material and enclosed in part in approved tubes or caps which will provide a one-half (1/2) inch minimum positive clearance pocket. The top surface of the curb shall be finished true to line and grade in a smooth, neat and even manner and the edge of the faces and back shall be rounded to a radius of one (1) inch.
- H. The depressed curb at driveways shall be no higher than one and one-half (1½) inches above the street surface. The length of this depressed curb shall not exceed thirty-five (35) feet without a safety island that shall not be less than fifteen (15) feet in length. Pipes or grates or other constructions shall not be placed in the gutter to form a driveway ramp.
- I. Where it is necessary to replace existing vertical curbs with depressed curbing, two (2) ten (10) foot long sections of existing curb shall be removed down to the sub-grade without disturbing the adjacent cartway paving. Any portions of the cartway disturbed during curbing removal or installation shall be repaired to new condition.
- J. Any depressed curb sections that are unused when a development or phase of a development is completed, shall be completely removed and replaced with full section upright curbing to line and grade of adjacent curbing. Forming and pouring vertical curbing on top of an existing curb depression will not be permitted.
- K. Curb cut ramps, for use by the handicapped, shall be provided at all street intersections, and shall be installed in accordance with the Standard Details.
- L. All joints between curbs and bituminous pavement shall be sealed with PG 64-22 conforming to PADOT Bulletin 25, or approved equal.

5.3 Sidewalks

- A. All residential developments in excess of ten (10) lots shall have either a sidewalk or pathway system acceptable to the Township. All residential developments with lots of one (1) acre or less shall provide sidewalks on both sides of new streets. Curbs shall always be required where sidewalks are required. The materials, location and construction of all proposed pathways shall be of approved by the Township.
- B. Concrete sidewalks shall be provided on all collector streets within a subdivision; on all streets within one thousand (1,000) feet of and leading to a school; on all commercial streets; and at such other locations deemed by the Board to be necessary for the safety and convenience of the public.
- C. Concrete sidewalks may be required on both sides of new streets in residential subdivisions and/or land developments. Sidewalks may be required on only one (1) side of the street in subdivisions and/or land developments if there are residential lots on only one (1) side of the street.
- D. Concrete sidewalks shall be provided along all new streets and parking areas located in non-residential subdivisions and/or land developments unless it can be shown, to the satisfaction of the Board of Supervisors, that pedestrian traffic does not follow or mix with vehicular traffic; in which case, both sidewalks and curbs may not be required.
- E. Concrete sidewalks, in all new developments or street construction, shall be located entirely within the street right-of-way, and shall be located a minimum of three (3) feet seven (7) inches from the curb line, measured from the curb line to the street side edge of the sidewalk. A grass planting-strip shall be provided between the curb and sidewalk. All required street trees shall be installed on the residence side of the sidewalk at a distance of at least two (2) feet outside of the ultimate right-of-way, unless otherwise specified elsewhere, in which case the greater distance shall apply. In developed areas of the Township, the existing conditions shall be considered in the application of these location requirements. Curb cut ramps, for use by the handicapped, shall be provided at all street intersections, and shall be in accordance with the Standard Details.
- F. All sidewalks shall be constructed of monolithic concrete. Said concrete shall develop a compressive strength of 3,500 pounds per square inch (psi) in twenty-eight (28) days. Certification of the concrete mix shall be provided to the Township.
- G. The paved width of sidewalks shall be a minimum of five (5) feet in all new developments or street construction. In no case shall a bike path be combined with a sidewalk. In developed areas of the Township, the existing conditions shall be considered in the application of these requirements.

- H. Where sidewalks abut a building, wall or other permanent structure, a pre-molded expansion joint filler, one-half (1/2) inch in thickness shall be placed between the building, wall or other permanent structure and the sidewalk for the full length of such building, wall or other permanent structure.
- I. Sidewalks shall have clean-cut joints, a minimum of one (1) inch deep, every five (5) linear feet, and expansion joints every thirty (30) linear feet or less, at structures, and at the end of each day's work. Expansion joints shall be one half (1/2) inch wide with pre-molded expansion joint filler. All sidewalks shall have a broom finish.
- J. Sidewalks shall not be less than four (4) inches in thickness and shall be placed on a minimum four (4) inch compacted base of AASHTO No. 57 (PADOT 2B) crushed stone. Where driveways cross sidewalks, sidewalks shall be a minimum of six (6) inches thick and shall include 6" x 6" x 10 gauge welded wire fabric (WWF) and shall be placed on a minimum four (4) inch compacted base of AASHTO No. 57 (PADOT 2B) crushed stone.
- K. Finished sidewalks shall have a cross slope of one eighth of an inch (1/8") vertical per foot horizontal, sloping downward toward the street. Finished sidewalks shall also have a grade from the inner edge of the sidewalk to the outer edge of the paved shoulder or curb of one eighth of an inch (1/8") vertical per foot horizontal.
- L. At driveway entrances, where there is no curb, the apron between the sidewalk and edge of road paving shall be bituminous, with the bituminous apron cross-section conforming to the requirements of the Township's Driveway Ordinance. A concrete apron may be utilized in lieu of a bituminous apron when approved by the Engineer. In all cases, the sidewalk shall extend across the full driveway width, and shall not terminate at the driveway edges.
- M. At driveway entrances, when there is curb, the apron between the curb and sidewalk shall be concrete. Concrete strength for a concrete apron shall be as specified previously for curbs and sidewalks. Concrete aprons shall be 6" thick and shall include 6"x6"x10 gauge WWF, and shall rest on a compacted bed of four (4) inch AASHTO No. 57 (PADOT 2B) crushed stone. Premolded expansion joints (1/2") shall be provided between concrete aprons and sidewalks, and between concrete aprons and curbs. In all cases, the sidewalk shall extend across the full driveway width, and shall not terminate at the driveway edges.
- N. All joints between sidewalks and bituminous pavement shall be sealed with PG 64-22, or approved equal.

SECTION 6 BICYCLE AND MULTI-PURPOSE PATHS

6.1 Materials

- A. Curb cut ramps, the same width as the path, shall be installed to permit the crossing of intersecting streets. Curb cut ramps shall be constructed as shown in the Standard Details.
- B. The vertical clearance from the path surface to overhead obstructions shall be not less than 10 feet.
- C. The path shall be 6' wide and constructed of a 4-inch AASHTO No. 57 (PADOT 2B) compacted aggregate base with a 2-inch ID-2 binder course and a 1-inch ID-2 wearing course. As may be approved by the Board of Supervisors on a case-by-case basis, the path may be constructed of a compacted 5-inch PADOT 2A aggregate base with a compacted 1-inch PADOT 1B choked stone surface course. Compaction of aggregate shall be to the satisfaction of the Engineer.
- D. All paths shall be constructed in such a manner to insure adequate and proper drainage and to prevent the path from being inundated by surface drainage.
- E. Unless specified otherwise, all materials and construction procedures shall be in accordance with PADOT Publication 408, latest edition.

SECTION 7 STORMWATER DRAINAGE FACILITIES

7.1 General

- A. Storm drainage facilities shall be designed and constructed in accordance with the Township's Stormwater Management Ordinance. The intent of these specifications is to supplement the Stormwater Management Ordinance; however, if there is a conflict between the requirements of the Stormwater Management Ordinance and these specifications, the requirements of the Stormwater Management Ordinance shall prevail.

7.2 Materials

- A. Inlet boxes shall conform to PADOT Standard Drawings and Publication 408, latest edition.
 - 1. PADOT Type 'C' inlet box tops shall be precast with Product No. 00700160 Trout Logo Plate as manufactured by East Jordan Iron Works, Inc., or equal, to assist the Township in satisfying its NPDES Phase II Stormwater Permit requirements. Plate shall contain the text "DUMP NO WASTE" and "DRAINS TO WATERWAYS", in addition to the profile of a trout.
 - 2. PADOT Type 'M' inlet box tops shall be precast with Product No. 00700360 Trout Logo Plate as manufactured by East Jordan Iron Works, Inc., or equal, to assist the Township in satisfying its NPDES Phase II Stormwater Permit requirements. Plate shall contain the text "DUMP NO WASTE" and "DRAINS TO WATERWAYS", in addition to the profile of a trout in a submerged environment.
- B. Inlet frames and grates shall conform to PADOT Standard Drawings and Publication 408, latest edition. Bicycle safe grates shall be installed where directed by the Engineer.
- C. Storm manholes shall conform to PADOT Standard Drawings and Publication 408, latest edition.
 - 1. Storm manhole frame shall be Product No. 00104510 as manufactured by East Jordan Iron Works, Inc., or equal, to assist the Township in satisfying its NPDES Phase II Stormwater Permit requirements.
 - 2. Storm manhole cover shall be Product No. 00103918 as manufactured by East Jordan Iron Works, Inc., or equal, to assist the Township in satisfying its NPDES Phase II Stormwater Permit requirements. Cover shall contain the text "DUMP NO WASTE" and "DRAINS TO WATERWAYS", in addition to the profile of a trout.

- D. All miscellaneous storm drainage appurtenances, such as head walls, endwalls and energy flow dissipators, shall be in accordance with PADOT Publication 408, latest edition and the PADOT Standard Drawings.
- E. Trench restoration for storm sewers shall be performed in accordance with the Standard Details.

7.3 Execution

- A. When there is a change in pipe size in an inlet or manhole, the elevation of the top of pipes shall be the same or the smaller pipe higher. A minimum drop of 2 inches shall be provided between the inlet pipe invert elevation and the outlet pipe invert elevation.
- B. At street intersections, inlets shall be placed in the tangent and not in the curved portion of the curbing.
- C. Inlets or manholes shall be placed at all changes in vertical or horizontal direction of pipe.
- D. Bridges
 - 1. A bridge shall be considered an enclosed water carrying structure of one or more cells having a combined span of 8 feet or greater.
 - 2. All bridge designs shall be in accordance with PADOT Design Manual, Part IV (latest revision) and shall be submitted to the Engineer for approval of materials, structural design, compliance to AASHTO HS-25 loading, flow design capacity and calculated life cycle of the proposed structure. All bridges shall have approach guide rail in accordance with PADOT.

SECTION 8 STORMWATER BASINS

8.1 General

- A. Stormwater detention and retention basins shall be designed and constructed in accordance with the Township's Stormwater Management Ordinance. The intent of these specifications is to supplement the Stormwater Management Ordinance; however, if there is a conflict between the requirements of the Stormwater Management Ordinance and these specifications, the requirements of the Stormwater Management Ordinance shall prevail.

8.2 Materials

- A. Pipe-reinforced concrete, rubber gasketed, shall conform to AASHTO M170, M198 and M207.
- B. Cast-in-Place Outlet Structure: Reinforced concrete, minimum 4,000 psi compressive strength in accordance with PADOT Publication 408, latest edition.
- C. Precast Outlet Structure: Reinforced concrete minimum 4,000-psi compressive strength in twenty-eight (28) days in accordance with PADOT Publication 408, latest edition. Submit design for Township review and approval.
- D. Precast Reinforced Concrete Inlet Box Sections shall be in accordance with AASHTO M259, PADOT Publication 408, latest edition and PADOT Standard Drawings.
- E. Orifice Plates: Stainless steel, type 304, with stainless steel mounting hardware. Use ¼ inch thick up to 24 inch span and 3/8 inch thick over 24 inch spans.
- F. Headwalls/Endwalls: Reinforced concrete, minimum 4,000 psi. Compressive strength in accordance with PADOT Publication 408, latest edition.
- G. Anti-Seep Collars: Reinforced concrete, minimum 4,000-psi compressive strength in twenty-eight (28) days.
- H. Concrete Pipe End Sections: Reinforced concrete in accordance with PADOT Publication 408, latest edition. Concrete pipe end sections shall be permitted only where approved by the Engineer.
- I. Steel Grates shall be in accordance with PADOT Publication 408, latest edition.

8.3 Execution

- A. Basins shall be installed prior to any earth moving or land disturbances that they will service. The phasing of their construction shall be as noted in the soil erosion and sedimentation pollution control narrative on the soil erosion and sedimentation

pollution control plan approved by Chester County Conservation District.

- B. Whenever a basin will be located in an area underlined by limestone, a geological evaluation of the proposed location will be conducted to determine susceptibility to sinkhole formations. The design of all facilities over limestone formations shall include measures to prevent ground water contamination and, where necessary, sinkhole formation. Soils used for the construction of basins shall have low-erodibility factors ("K" factors) with values between 0.17 and 0.49.
- C. The maximum slope of earthen basin embankments shall be four horizontal to one vertical (4:1). The top and/or toe of any slope shall be located a minimum of five (5) feet from any property line. Whenever possible, the side slopes and basin shape shall conform to the natural topography.
- D. The minimum top width of the basin berm shall be 10 feet. A cutoff trench (key-way) of impervious material shall be provided under all embankments that require fill material. The cutoff trench shall be a minimum of 8 feet wide, 2 feet deep and have side slopes of one to one (1:1).
- E. In order to insure proper drainage on the floor of the basin, a minimum grade of 2% shall be maintained for areas of sheet flow to provide positive drainage in the direction of the outlet structure. Under certain circumstances, such as continuous seasonal flow, the Township may require that a low flow channel be constructed.
- F. All basin embankments shall be placed in maximum of 8-inch lifts, compacted to a minimum of 95% of the maximum dry density, as established by ASTM D-1557, PTM No. 112 or PTM No. 402. Prior to proceeding to the next lift, the compaction shall be checked by a soils engineer. The Extender shall obtain the services of a third-party certified materials testing firm to perform the tests on the leading and the trailing edge of the berm along with the top of the berm. All test results shall be signed and sealed by a Professional Engineer registered in the Commonwealth of Pennsylvania and shall be furnished to the Engineer for review and approval. Any location not meeting the compaction requirements shall be re-compacted and retested until suitable compaction is achieved.
- G. Whenever possible, the emergency spillway for basins shall be constructed on undisturbed ground. Emergency spillways shall be constructed of reinforced concrete checker blocks or other permanent material approved by the Engineer. All emergency spillways shall be constructed so that the basin berm is protected against erosion. The minimum capacity of all emergency spillways shall be the peak flow rate from the 100-year design storm after development. The construction material of the emergency spillway shall extend along the upstream and downstream berm embankment slopes. The upstream edge of the emergency spillway shall, at a minimum, extend to the toe of the berm embankment. The emergency spillway shall not discharge over earthen fill and/or easily erodible material.

- H. The minimum freeboard for flow through the emergency spillway shall be 1 foot. Freeboard is the difference between the design water elevation in the spillway at the 100-year design storm peak flow rate and the top of berm elevation.
- I. Anti-seep collars shall be installed around the outlet pipe barrel within the normal saturation zone of the basin berms. The anti-seep collars and their connections to the pipe barrel shall be watertight. The anti-seep collars shall extend a minimum of 2 feet beyond the outside of the principal pipe barrel. The maximum spacing between collars shall be 14 times the minimum projection of the collar measured perpendicular to the pipe. A minimum of two anti-seep collars shall be installed on each outlet pipe.

SECTION 9 PUBLIC SANITARY SEWERS

Public sanitary sewers and appurtenances shall be designed and constructed in accordance with the Township's Technical Specifications for Construction of Sanitary Sewers and Appurtenances, latest revision thereof.

SECTION 10 PUBLIC WATER DISTRIBUTION

10.1 General

- A. Prior to the installation of any public water distribution system, the Extender shall furnish the Township with a Letter of Serviceability from the public water purveyor with franchise rights in the subject area. The Letter of Serviceability shall include the following:
 - 1. Identification of the number of units to be serviced.
 - 2. Certification that the demand and pressure requirements identified in the Township's Subdivision and Land Development Ordinance will be met, and in the case of residential dwelling units, further certification that said requirements will be met without the need for individual residential booster pumps in any of the dwelling units.
- B. Prior to the installation of any public water distribution system, the Extender shall furnish the Township with a letter from the public water purveyor with franchise rights in the subject area approving the Construction Drawings for the public water distribution system.
- C. Water distribution mains shall be a minimum of 8" (nominal) in diameter.
- D. For land development projects, the only item related to public water distribution systems for which financial security for the construction of improvements shall be posted is fire hydrants.

10.2 Fire Hydrants

- A. Fire Hydrants shall be cast iron body, fully bronze mounted, suitable for a working pressure of 200 psi, and shall conform to AWWA Standard C502, latest revision. Hydrants shall be constructed in a manner permitting withdrawal of internal working parts without disturbing the barrel or casing. Valve, when shut, shall be reasonably tight when upper portion of barrel is broken off. Valve opening shall be 5-¼ inch diameter. Hydrant shall be provided with two 2 ½" hose nozzles and one 4 ½" pumper nozzle. Each hydrant shall be shop tested to hydrostatic pressure of 400 psi with valve in both open and closed positions.
 - 1. The main valve shall open left with the direction of opening cast on head of hydrant. Operating nut shall be a pentagon with National Standard threads. The hydrant shall be currently dated.
 - 2. Hydrants shall be enameled above ground with fire hydrant or fire protection red, with the minimum dry film thickness as recommended by the hydrant manufacturer.

3. Acceptable Manufacturer and Model: Hydrants shall be Mueller Modern Centurion Catalog No. A-442. Other models may be accepted if approved by the Township, local fire company, and public water purveyor with franchise rights in the Township.
- B. Pole Marker: A pole marker shall be provided on each hydrant. Pole marker shall be 5' reinforced fiberglass, red with reflective white bands, heavy-duty spring and integral mounting bracket. Pole marker shall be USA BlueBook Stock No. 22516, or approved equal.
- C. Adapter: In order to accommodate the needs of the local fire company, each hydrant shall be fit with a 5" Storz-compatible adapter and cap.

SECTION 11 STREET SIGNS AND MARKINGS

11.1 Street Name Signs

- A. Unless specified otherwise, all materials, sign dimensions, lettering and installation shall meet the requirements of Pennsylvania Code Title 67, Chapter 211.
- B. Street name signs shall be reflectorized with a white legend on a green background.
- C. Street name sign posts shall be hot dipped galvanized steel or aluminum tubing, twelve foot (12') one piece section, 2-3/8" O.D., minimum 2 lbs. per foot.
- D. All fittings shall be aluminum and/or stainless steel.
- E. Each post shall have a minimum of two signs, naming each street.
- F. Where new streets are constructed, street name signs shall be installed immediately after installation of the road binder course or prior to issuance of the first new home use and occupancy permit, whichever occurs first.

11.2 End of Street Permanent Barricade

- A. Barricade, if required, shall meet PADOT standards.

11.3 End of Lane Markings

- A. Right clearance markers, PADOT W16-2-2R, and painted line striping shall be installed at all widened sections of roadways where the widened portion of the lane ends, and shall be as shown in the Standard Details.
- B. The markers shall be reflectorized white and red stripes. The bottom of the markers shall be at least 18 inches above the pavement and shall be mounted on steel channel post with breakaway mount. Line striping shall be as shown in the Standard Details.

11.4 Shoulder Markings

- A. At all streets and widened sections of road where curb is not required, but paved shoulders are to be constructed, the cartway shall be delineated from the shoulder by the painting of a four inch (4") wide white line.

11.5 Traffic Paint

- A. General: Traffic paint shall be of a ready-mixed pigmented binder in a single package system and shall meet the requirements of ASTM D868 and ASTM D1309. When applied at a wet-film thickness of 15 mils, paint shall be suitable for application to traffic bearing surfaces such as Portland cement concrete, bituminous pavements, and plain or vitrified brick surfaces of streets, highways, bridges, tunnels, and parking lots.
- B. Traffic paint shall be either an alkyd resin type product or a combination of alkyd resin modified with chlorinated rubber, ready-mixed, white and yellow. Products shall be reflectorized for night visibility, if required, by adding reflective spheres before the paint dries or sets, using the drop-on or pressurized methods.
 - 1. Pigments: Except for the yellow pigment, the supplier may use any combination of pigments provided the finished paint meets all the requirements specified herein. Supplier may use any organic yellow pigment provided it does not contain any of the metals listed in Environmental Protection Agency (EPA) Code of Federal Regulations 40, Section 261.24, Table 1. Sufficient suspending and dispersing agents shall be used to prevent excessive settling as specified herein.
 - 2. Binder: The supplier may use any combination of ingredients, except tall oil resins, provided the finished paint meets all the requirements herein. Sufficient amounts of anti-skinning agents shall be used to prevent skinning as specified herein. Sufficient resin solids, compatible thinners and driers, if necessary, shall be used to meet requirements of Table I.

C. Paint Requirements: The mixed paints shall meet the requirements specified below in the following table for white and yellow paints:

1. Color of Yellow Paint: The color of the dry paint film when compared visually shall essentially match Color No. 33538 of Federal Standard 595.
2. Glass spheres shall meet the requirements of PA DOT Publication 408, Section 1103.14(a)2.

REQUIREMENTS OF MIXED PAINTS

Characteristics	Standards	Type I White & Yellow
Pigment, percent by weight		55-60
Nonvolatile vehicle, percent by weight of vehicle		40 Min.
Uncombined water, percent by weight of paint		1.0 Max.
Coarse particles and skins (retained on No. 325 sieve, 1/Percent by weight of pigment)		1.0 Max.
Consistency: Krebs Units		65-70 (Type I) 70-110 (Type II)
Weight per gallon, lbs. White		11.7 Min.
Yellow		12.0 Min.
Fineness of grind, Hegman		2.0 Min.
Contract ratio, dry		0.96 Min.
Directional reflectance: White		84 Min.
Yellow		50 Min.
Drying time, No pick-up, minutes (lab)	ASTM D711	30 Max.
Flexibility		No cracking or flaking
Bleeding Test	ASTM D868 & D969	5 Min.
Water Resistance		---
Skinning (48 hours)		None
Storage Stability	ASTM D1309	6 Min.
Condition in Container (1/Sieve conforming to RR-S-366)		See 3.6.3

SECTION 12 MAILBOXES

12.1 Materials and Construction

- A. All materials and construction shall meet the requirements of the U.S. Postal Service.

12.2 Execution

- A. All mailbox locations shall be subject to approval by the Post Office and the Township. Residents should contact the Township and the Post Office serving their area prior to the installation of any new mailbox.
- B. Unless directed otherwise by the Post Office, mailboxes shall be installed as follows:
 - 1. The bottom of the box shall be 42" to 45" above the road or paved shoulder elevation adjacent to the box.
 - 2. The front face of the box shall be 2" to 3" behind the face of curb or behind the edge of paved shoulder. No portion of the mailbox or supporting post shall overhang the road or paved shoulder.
 - 3. If possible, the mailbox shall be located to the left of the driveway when facing the house from the road.

SECTION 13 EMERGENCY ACCESS DRIVES

13.1 General

- A. If required by the Board of Supervisors, emergency access drives shall be designed and constructed as shown in the Standard Details.
- B. Emergency access drive shall be 12 feet wide, and shall be located and centered within a 20-foot wide emergency access easement, which shall be offered for dedication to the Township.

13.2 Materials and Construction

- A. Emergency access drive shall contain a porous paving system as shown in the Standard Details. Porous paving system shall be Geoblock GB-5150 Porous Pavement System as manufactured by Presto Products Company, or approved equal.
- B. Porous paving system shall be designed for Heavy Fire Truck Access and H-20 loading.
- C. The engineered base shall be designed for vegetated surfaces.
- D. Porous paving system shall be installed in accordance with the manufacturer's requirements and recommendations.

APPENDICES

APPENDIX 1

Standard Details

LIST OF STANDARD DETAILS


Detail Name	Detail No.
Minimum Street Construction Standards	1
Typical Roadway Sections	2
Storm Sewer Trench Restoration – Existing Roads	3
Storm Sewer Trench Restoration – New Roads	4
Storm Sewer Trench Restoration – Lawn/Agricultural Areas	5
Driveway With Pipe – No Curb & No Sidewalk	6A
Driveway With Gutter – No Curb & No Sidewalk	6B
Driveway With Pipe – With Sidewalk & No Curb	6C
Driveway With Gutter – With Sidewalk & No Curb	6D
Driveway With Curb & No Sidewalk	6E
Driveway With Curb & Sidewalk	6F
Driveway Detail – Adjacent Dwelling Units w/ Connected Garages	7
Curb & Sidewalk Details.....	8
Depressed Curb & Apron	9
Curb Cut Ramp Details	10
Curb Cut Ramp Dimensions	11
End of Lane Marker	12
Emergency Access Drive	13

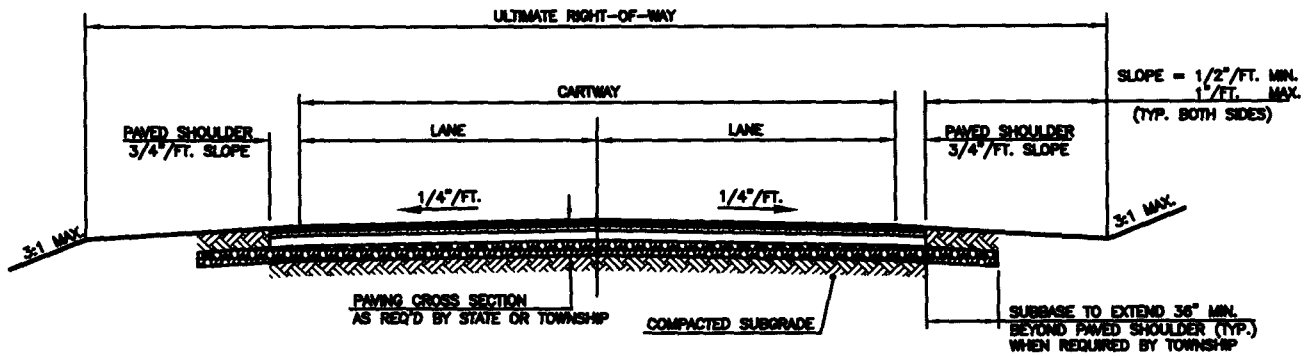
	REFERENCE *	LOCAL, CUL-DE-SAC, COLLECTOR & ARTERIAL	COMMERCIAL
ID-2 WEARING COURSE	420	1 1/2"	1 1/2"
ID-2 BINDER COURSE	421	2"	2"
BITUMINOUS CONCRETE BASE COURSE (BCBC)	305	5"	6"
PA DOT NO. 2A COARSE AGGREGATE SUBBASE	703.2	6"	6"

NOTES:

1. ALL THICKNESS SPECIFICATIONS ARE FOR COMPACTED MATERIALS.
2. BCBC OVER (5) INCHES IN DEPTH SHALL BE LAID IN TWO (2) PASSES.
3. ALL BASE COURSES AND/OR ID-2 BINDER COURSE SHALL BE OVER LAID WITH A WEARING COURSE NO LATER THAN ONE YEAR AFTER INSTALLATION UNLESS APPROVED OTHERWISE BY THE TOWNSHIP.
4. BINDER COURSE SHALL BE INSTALLED IMMEDIATELY FOLLOWING BASE COURSE INSTALLATION.

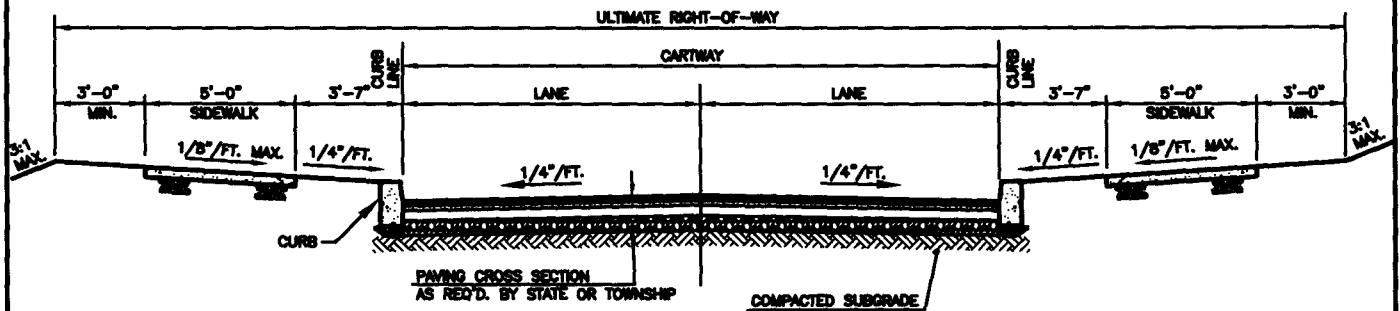
* REFERENCE TO SECTION NUMBER IN PADOT Pub. 408, LATEST REVISION.

		EAST COVENTRY TOWNSHIP STANDARD DETAIL	 Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
2	11/21/06	MINIMUM STREET CONSTRUCTION STANDARDS	DATE: SEPTEMBER 2002
1	2/13/04		DETAIL: 1
REVISION	DATE		



TYPICAL ROADWAY SECTION

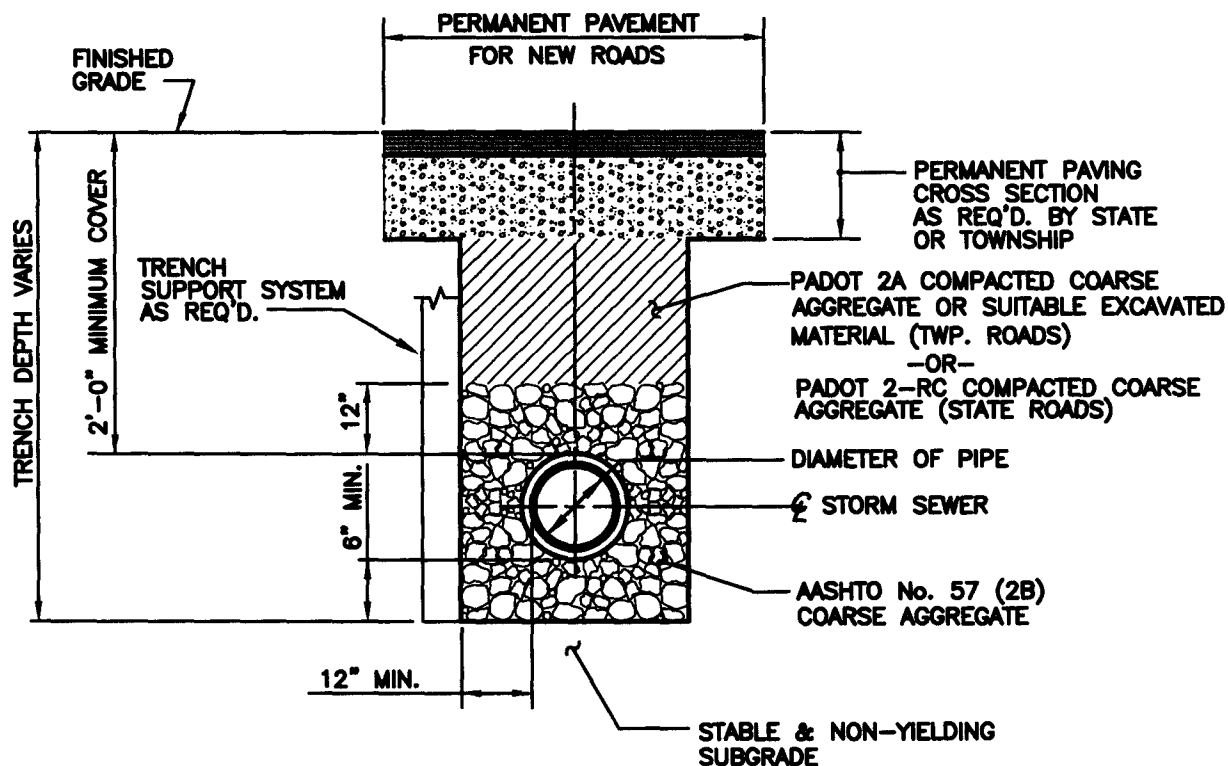
NO SCALE



TYPICAL ROADWAY SECTION W/ CURB & SIDEWALK

NO SCALE

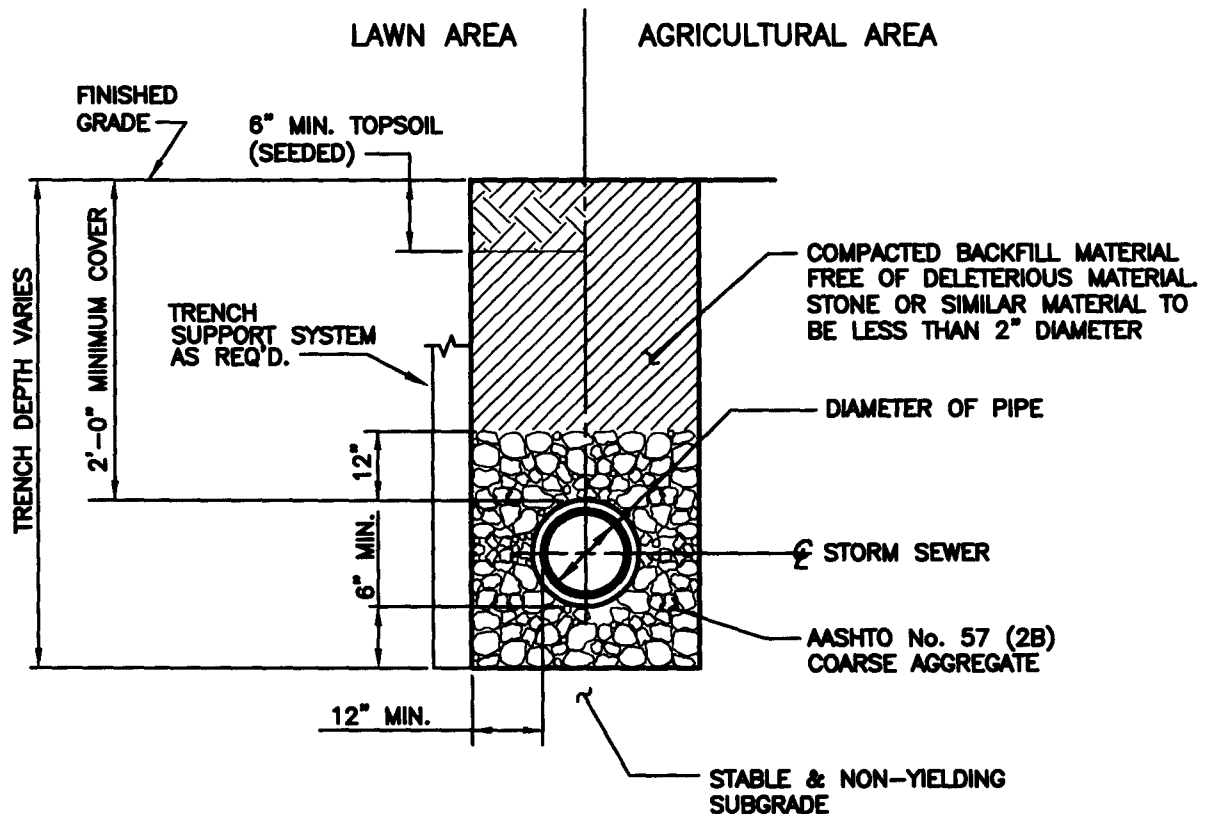
		EAST COVENTRY TOWNSHIP STANDARD DETAIL	 Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
1	2/13/04	TYPICAL ROADWAY SECTIONS	DATE: SEPTEMBER 2002
REVISION	DATE		DETAIL: 2



NOTES:

1. PROVIDE TRENCH SUPPORT SYSTEM AS REQ'D. FOR EXCAVATION PROTECTION & TO ALLOW FOR REQ'D. COMPACTION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING TRENCHES, IF REQ'D., BEFORE PLACEMENT OF BEDDING MATERIAL.
3. FOR STATE ROADS, ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE. DESIGN & CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE HIGHWAY OCCUPANCY PERMIT ISSUED BY PADOT FOR THE SPECIFIC PROJECT.

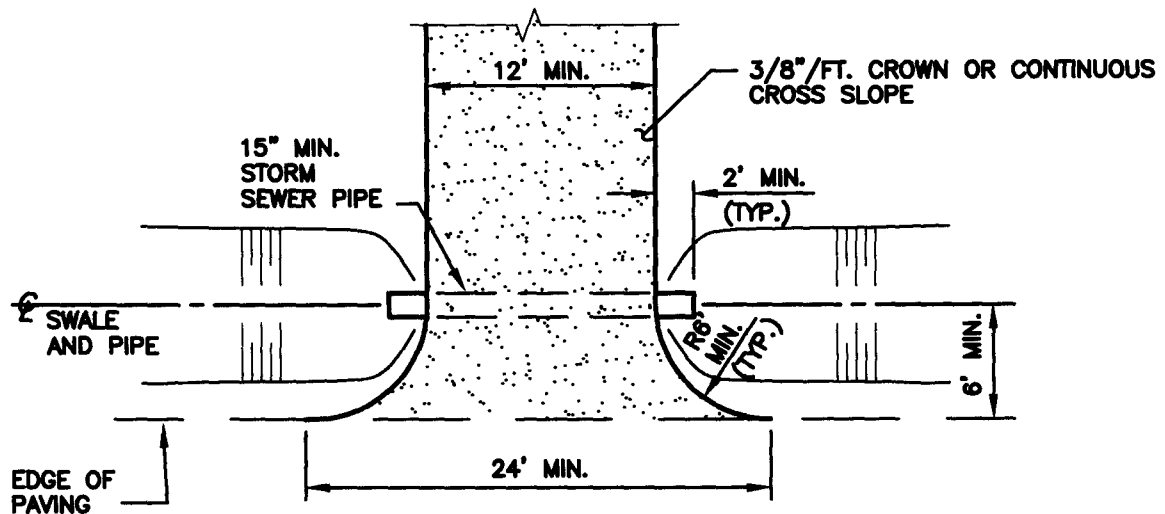
		EAST COVENTRY TOWNSHIP STANDARD DETAIL	 <i>ARRO Consulting, Inc.</i> Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
2	11/21/06	STORM SEWER TRENCH RESTORATION - NEW ROADS	DATE: SEPTEMBER 2002
1	2/13/04		DETAIL: 4
REVISION	DATE		



NOTES:

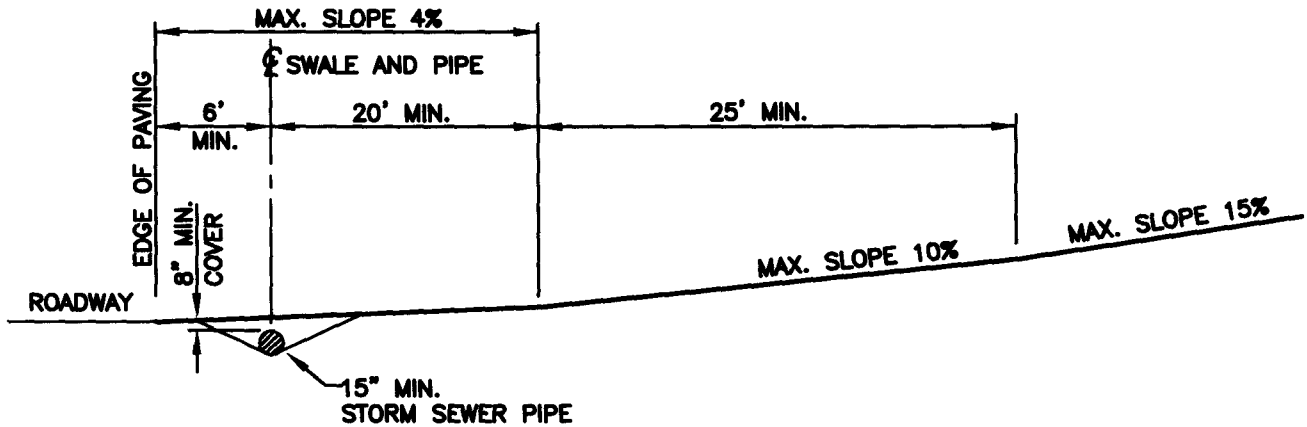
1. PROVIDE TRENCH SUPPORT SYSTEM AS REQ'D. FOR EXCAVATION PROTECTION & TO ALLOW FOR REQ'D. COMPACTION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING TRENCHES, IF REQ'D., BEFORE PLACEMENT OF BEDDING MATERIAL.
3. IF EDGE OF TRENCH IS 3' OR LESS FROM EDGE OF PAVING OF A STATE ROAD, RESTORATION ABOVE TOP OF PIPE SHALL BE IN ACCORDANCE WITH THE HIGHWAY OCCUPANCY PERMIT ISSUED BY PADOT FOR THE SPECIFIC PROJECT.

		EAST COVENTRY TOWNSHIP STANDARD DETAIL	 Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
2	11/21/06	STORM SEWER TRENCH RESTORATION - LAWN/AGRICULTURAL AREAS	DATE: SEPTEMBER 2002
1	2/13/04		DETAIL: 5
REVISION	DATE		



PLAN

NO SCALE



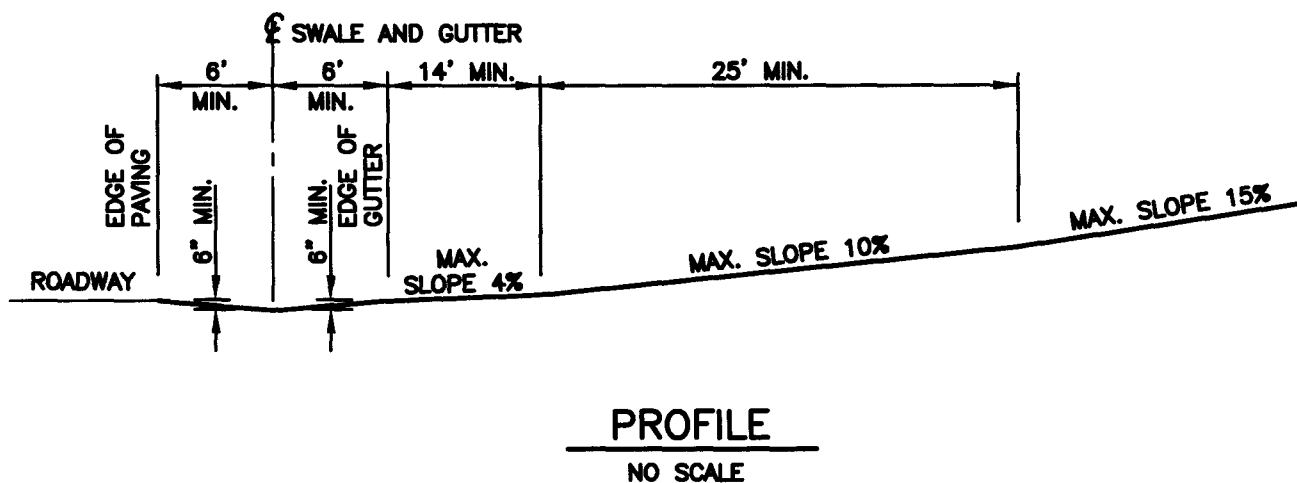
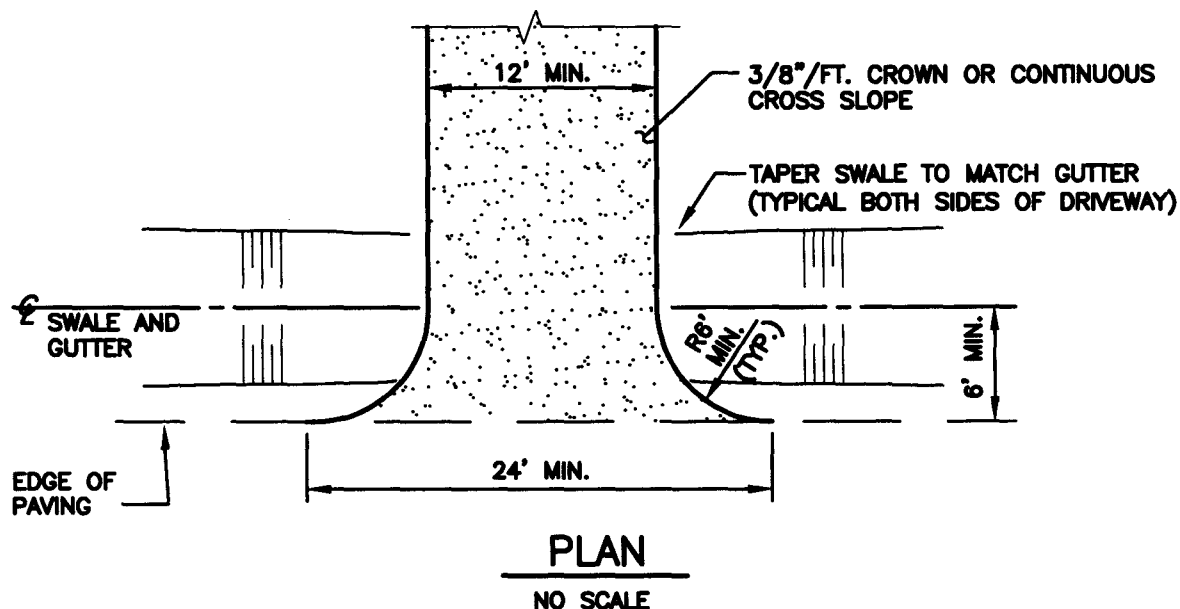
PROFILE

NO SCALE

NOTES:

1. INTERSECTION OF DRIVEWAY WITH EDGE OF PAVING SHALL BE CONSTRUCTED BY USE OF EITHER A PIPE OR GUTTER AT THE DIRECTION OF THE BOARD UPON RECOMMENDATION OF THE TOWNSHIP ENGINEER (NEW DRIVEWAYS), OR AT THE DIRECTION OF THE DRIVEWAY INSPECTOR (EXISTING DRIVEWAYS).
2. A TAPERED APRON MAY BE USED IN LIEU OF A RADIUS IF APPROVED BY THE TOWNSHIP ENGINEER.
3. DRIVEWAY CROSS SECTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS IDENTIFIED IN THE TOWNSHIP'S DRIVEWAY ORDINANCE.

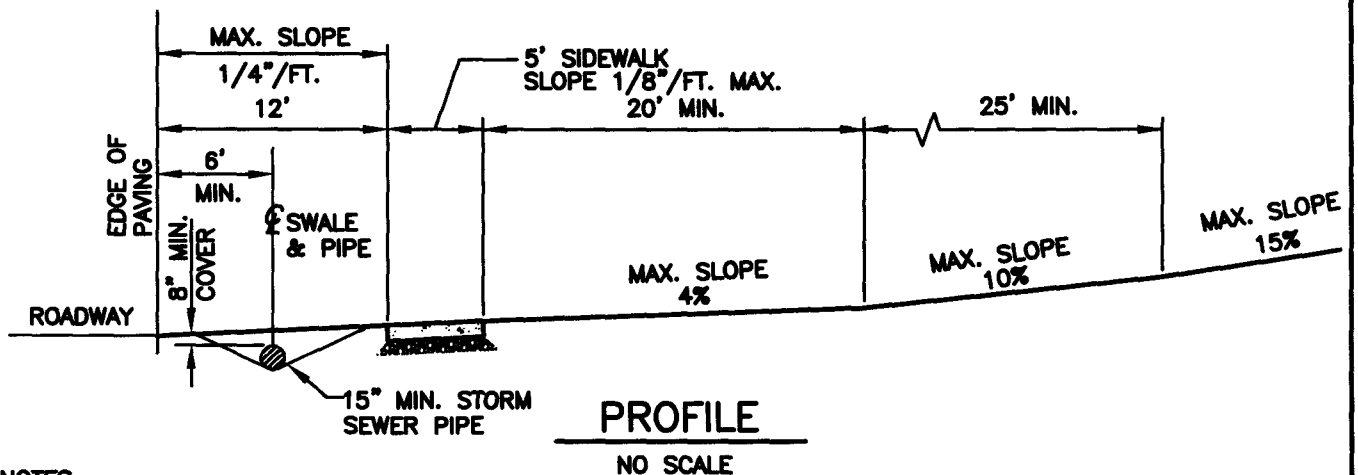
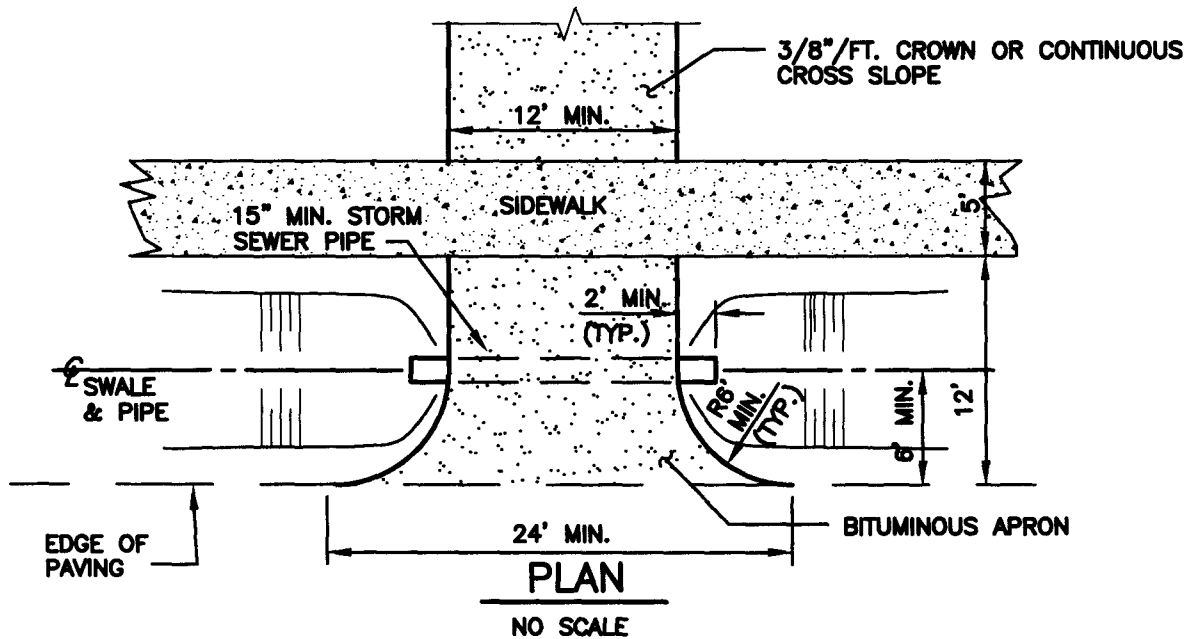
		EAST COVENTRY TOWNSHIP STANDARD DETAIL	 ARRO Consulting, Inc. Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
2	11/21/06	DRIVEWAY WITH PIPE - NO CURB & NO SIDEWALK	DATE: OCTOBER 6, 2003
1	2/13/04		DETAIL: 6A
REVISION	DATE		



NOTES:

1. INTERSECTION OF DRIVEWAY WITH EDGE OF PAVING SHALL BE CONSTRUCTED BY USE OF EITHER A PIPE OR GUTTER AT THE DIRECTION OF THE BOARD UPON RECOMMENDATION OF THE TOWNSHIP ENGINEER (NEW DRIVEWAYS), OR AT THE DIRECTION OF THE DRIVEWAY INSPECTOR (EXISTING DRIVEWAYS).
2. A TAPERED APRON MAY BE USED IN LIEU OF A RADIUS IF APPROVED BY THE TOWNSHIP ENGINEER.
3. DRIVEWAY CROSS SECTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS IDENTIFIED IN THE TOWNSHIP'S DRIVEWAY ORDINANCE.

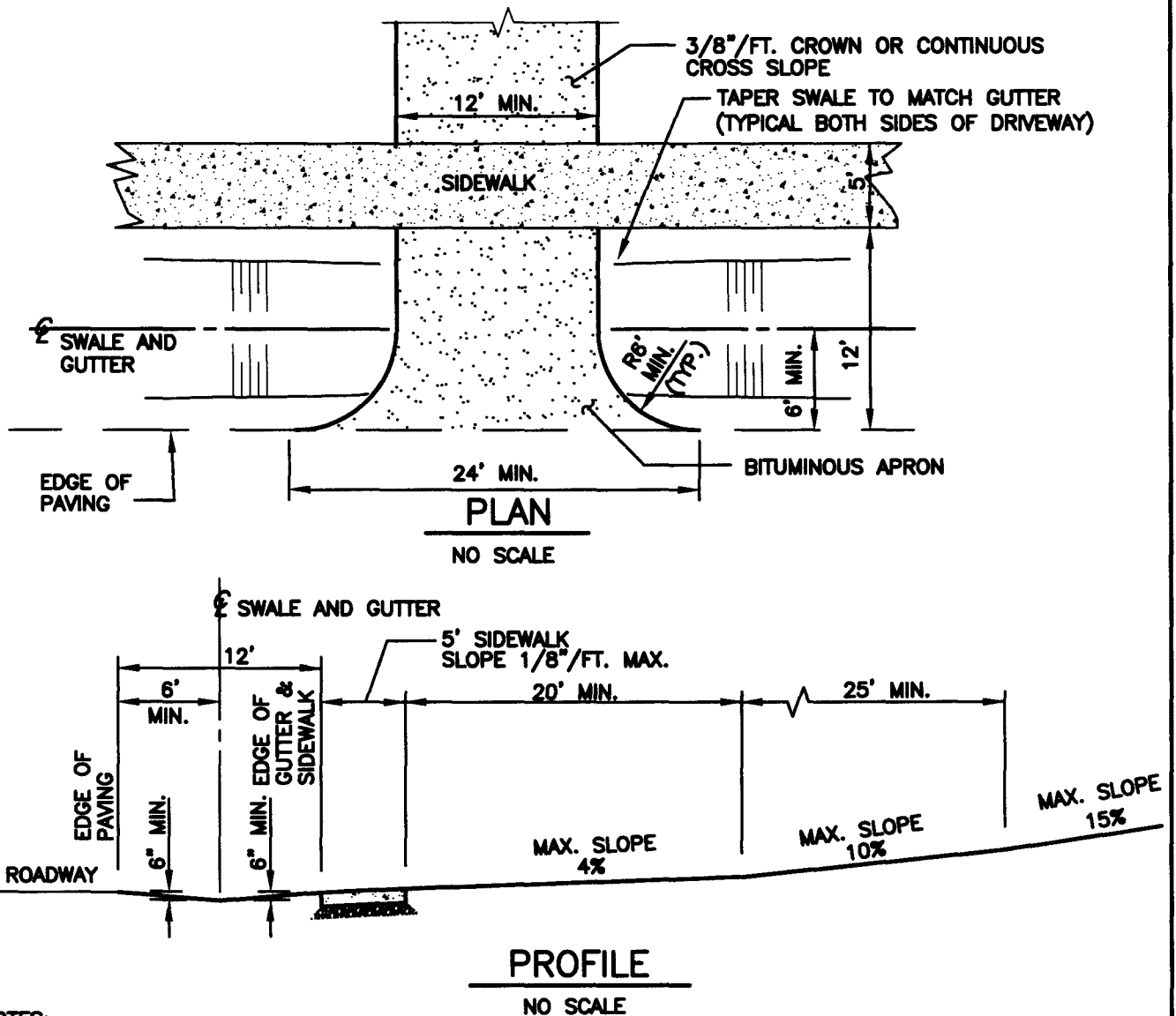
		EAST COVENTRY TOWNSHIP	 ARRO ARRO Consulting, Inc. Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
2	11/21/06	STANDARD DETAIL	
1	2/13/04		
REVISION	DATE	DRIVEWAY WITH GUTTER - NO CURB & NO SIDEWALK	DATE: OCTOBER 6, 2003
			DETAIL: 6B



NOTES:

1. INTERSECTION OF DRIVEWAY WITH EDGE OF PAVING SHALL BE CONSTRUCTED BY USE OF EITHER A PIPE OR GUTTER AT THE DIRECTION OF THE BOARD UPON RECOMMENDATION OF THE TOWNSHIP ENGINEER (NEW DRIVEWAYS), OR AT THE DIRECTION OF THE DRIVEWAY INSPECTOR (EXISTING DRIVEWAYS).
2. CONCRETE APRON MAY BE UTILIZED IN LIEU OF BITUMINOUS APRON IF APPROVED BY THE TOWNSHIP ENGINEER. IF CONCRETE APRON IS UTILIZED, A 1/2" PREMOLDED EXPANSION JOINT SHALL BE PROVIDED BETWEEN THE APRON AND SIDEWALK.
3. A TAPERED APRON MAY BE USED IN LIEU OF A RADIUS IF APPROVED BY THE TOWNSHIP ENGINEER.
4. DRIVEWAY & BITUMINOUS APRON CROSS SECTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS IDENTIFIED IN THE TOWNSHIP'S DRIVEWAY ORDINANCE.

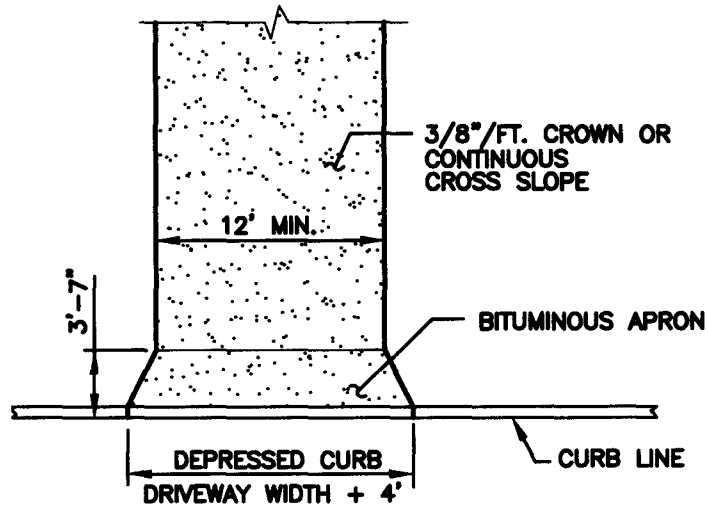
		<div>EAST COVENTRY TOWNSHIP</div> <div>STANDARD DETAIL</div>	<div><div>Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303</div></div>
2	11/21/06	<div>DRIVEWAY WITH PIPE - WITH SIDEWALK & NO CURB</div>	DATE: OCTOBER 6, 2003
1	2/13/04		DETAIL: 6C
REVISION	DATE		



NOTES:

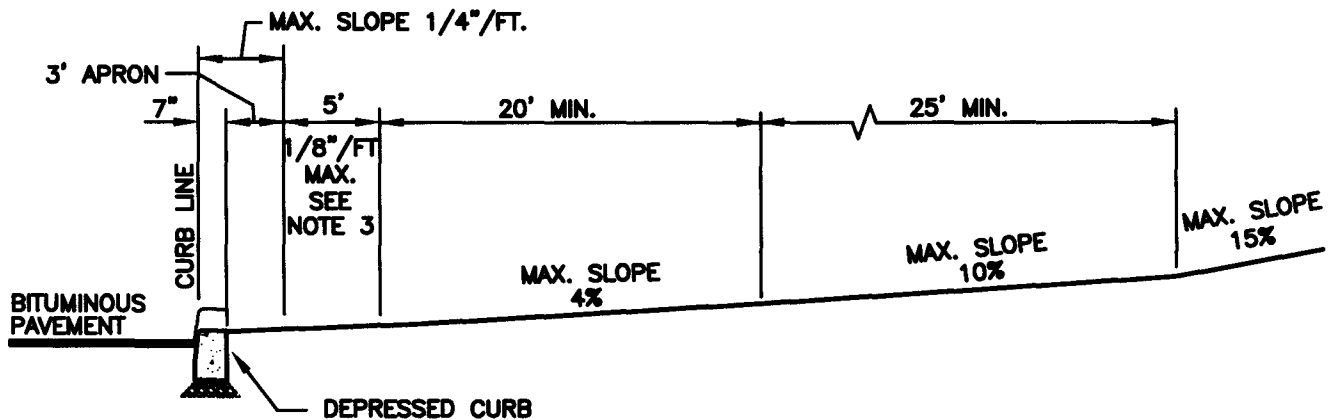
1. INTERSECTION OF DRIVEWAY WITH EDGE OF PAVING SHALL BE CONSTRUCTED BY USE OF EITHER A PIPE OR GUTTER AT THE DIRECTION OF THE BOARD UPON RECOMMENDATION OF THE TOWNSHIP ENGINEER (NEW DRIVEWAYS), OR AT THE DIRECTION OF THE DRIVEWAY INSPECTOR (EXISTING DRIVEWAYS).
2. CONCRETE APRON MAY BE UTILIZED IN LIEU OF BITUMINOUS APRON IF APPROVED BY THE TOWNSHIP ENGINEER. IF CONCRETE APRON IS UTILIZED, A 1/2" PREMOLDED EXPANSION JOINT SHALL BE PROVIDED BETWEEN THE APRON AND SIDEWALK.
3. A TAPERED APRON MAY BE USED IN LIEU OF A RADIUS IF APPROVED BY THE TOWNSHIP ENGINEER.
4. DRIVEWAY & BITUMINOUS APRON CROSS SECTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS IDENTIFIED IN THE TOWNSHIP'S DRIVEWAY ORDINANCE.

		EAST COVENTRY TOWNSHIP STANDARD DETAIL	 ARRO Consulting, Inc. Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
2	11/21/06	DRIVEWAY WITH GUTTER - WITH SIDEWALK & NO CURB	DATE: OCTOBER 6, 2003
1	2/13/04		DETAIL: 6D
REVISION	DATE		



PLAN

NO SCALE




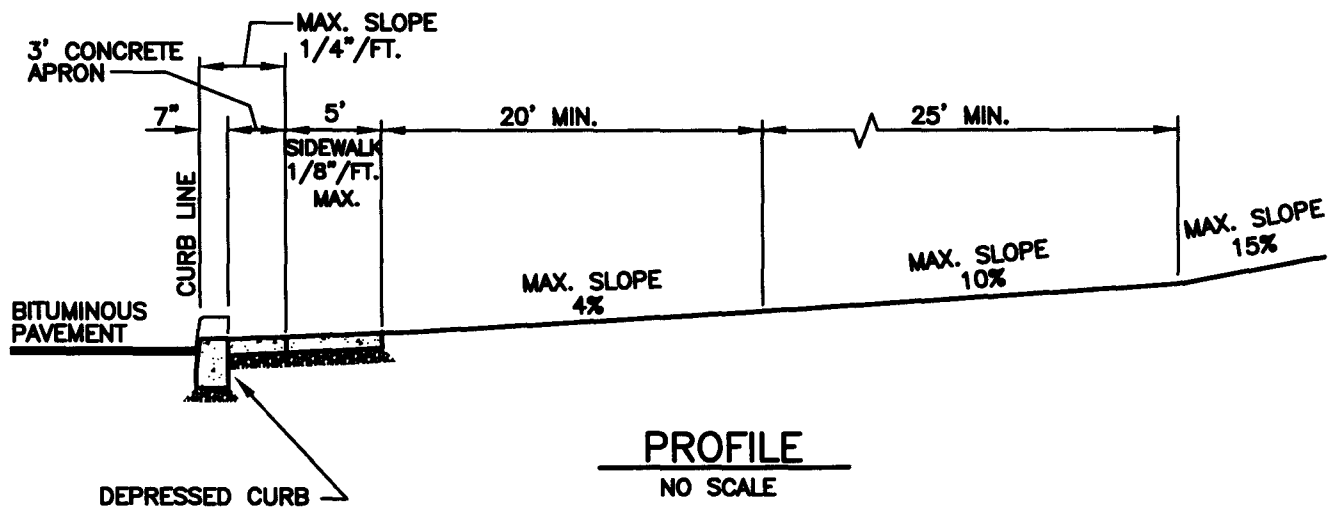
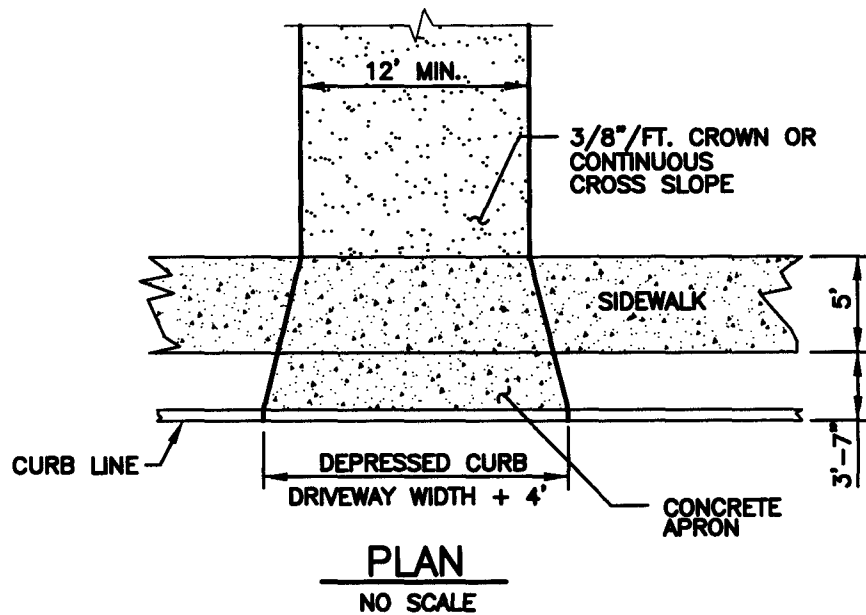
PROFILE

NO SCALE

NOTES:


1. DRIVEWAY & BITUMINOUS APRON CROSS SECTION SHALL BE IN ACCORDANCE WITH THE DRIVEWAY REQUIREMENTS IDENTIFIED IN THE TOWNSHIP'S DRIVEWAY ORDINANCE
2. CONCRETE APRON MAY BE UTILIZED IN LIEU OF BITUMINOUS APRON IF APPROVED BY THE TOWNSHIP ENGINEER. IF CONCRETE APRON IS UTILIZED, A 1/2" PREMOLDED EXPANSION JOINT SHALL BE PROVIDED BETWEEN THE APRON AND CURB.
3. A 5' WIDTH SHALL BE PROVIDED ADJACENT TO THE APRON TO ACCOMMODATE POTENTIAL FUTURE SIDEWALK.

		<div>EAST COVENTRY TOWNSHIP</div> <div>STANDARD DETAIL</div>	<div><div>ARRO Consulting, Inc.</div><div>Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303</div></div>
1	2/13/04	<div>DRIVEWAY</div> <div>WITH CURB & NO SIDEWALK</div>	DATE: OCTOBER 6, 2003
REVISION	DATE		DETAIL: 6E



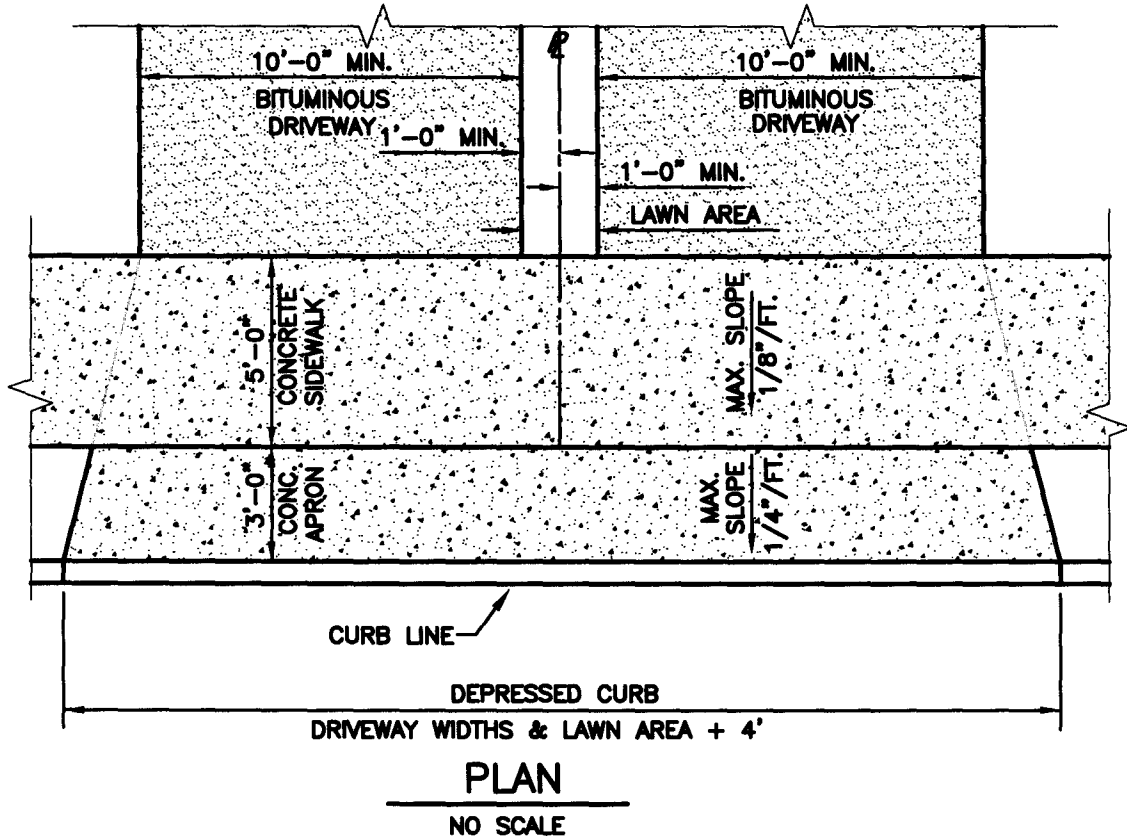
NOTES:


1. DRIVEWAY CROSS SECTION SHALL BE IN ACCORDANCE WITH THE DRIVEWAY REQUIREMENTS IDENTIFIED IN THE TOWNSHIP'S DRIVEWAY ORDINANCE.
2. 1/2" PREMOLDED EXPANSION JOINT SHALL BE PROVIDED BETWEEN THE APRON AND SIDEWALK AND BETWEEN THE APRON AND CURB.

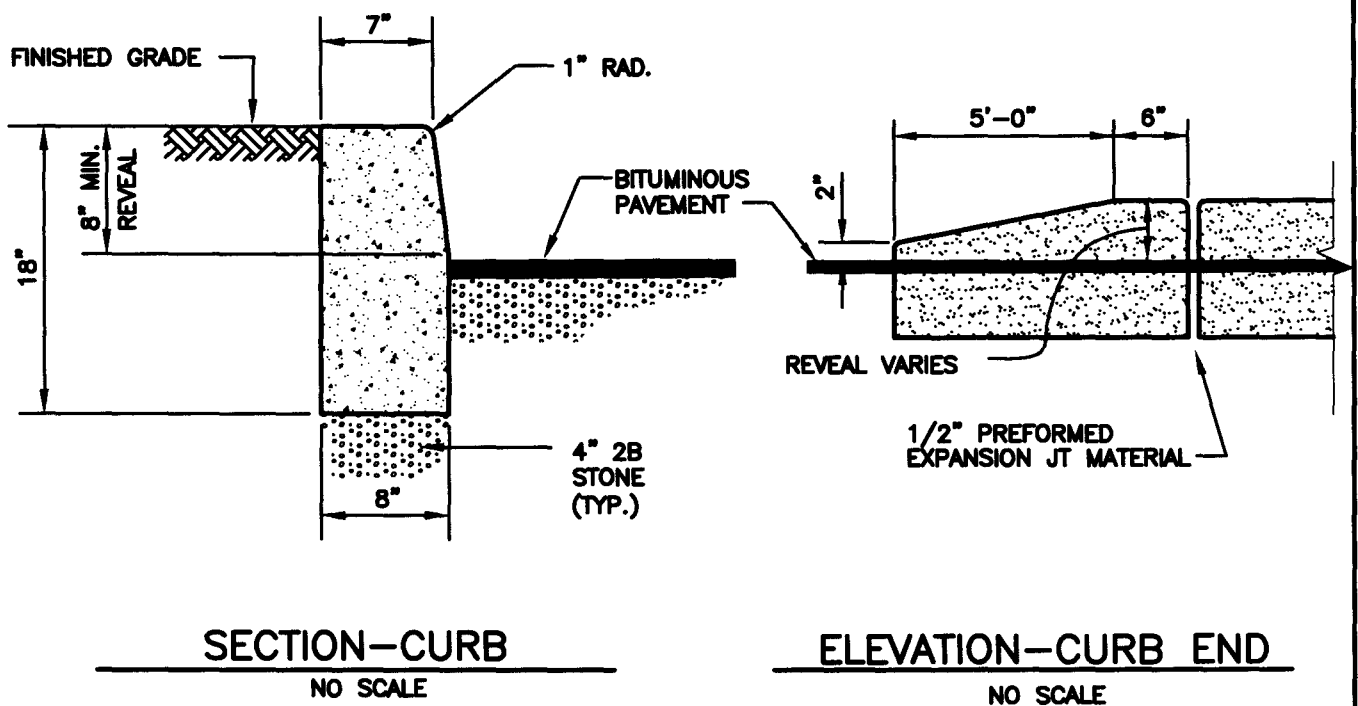
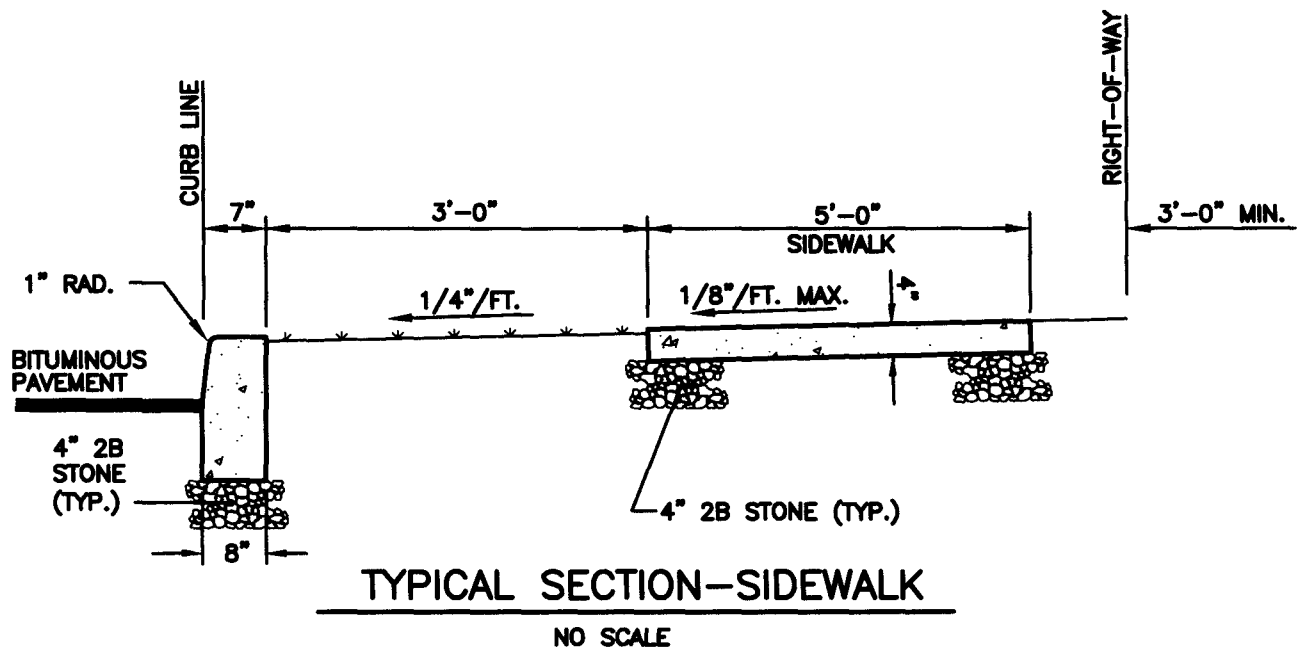
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1	2/13/04	<div>DRIVEWAY</div> <div>WITH CURB & SIDEWALK</div>	DATE: OCTOBER 6, 2003
REVISION	DATE		DETAIL: 6F

NOTES:

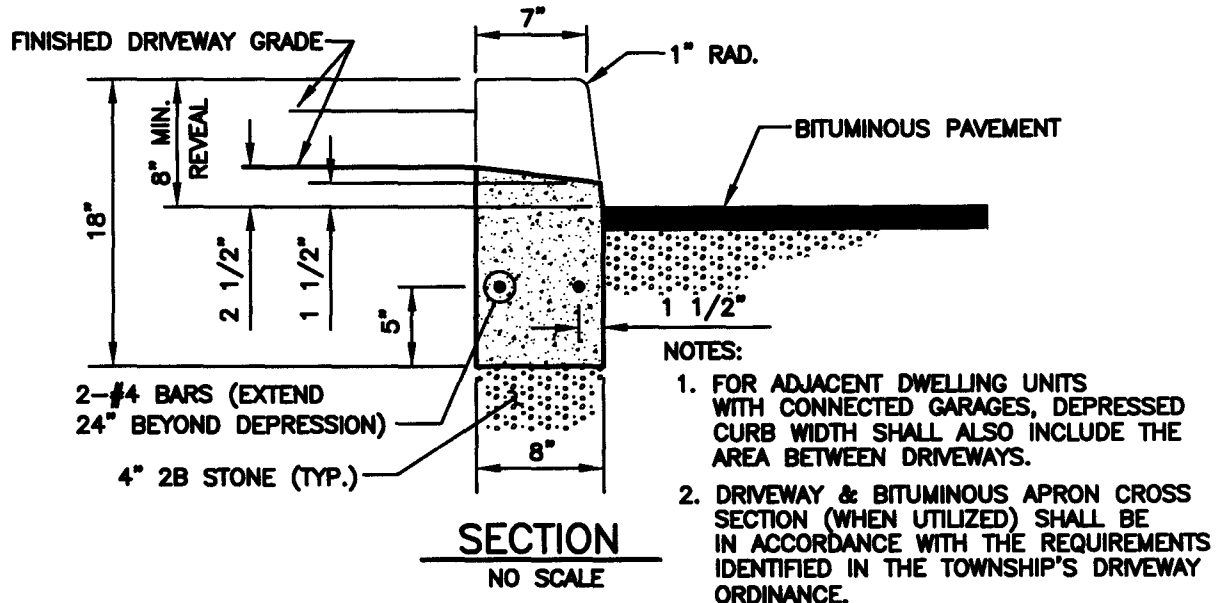
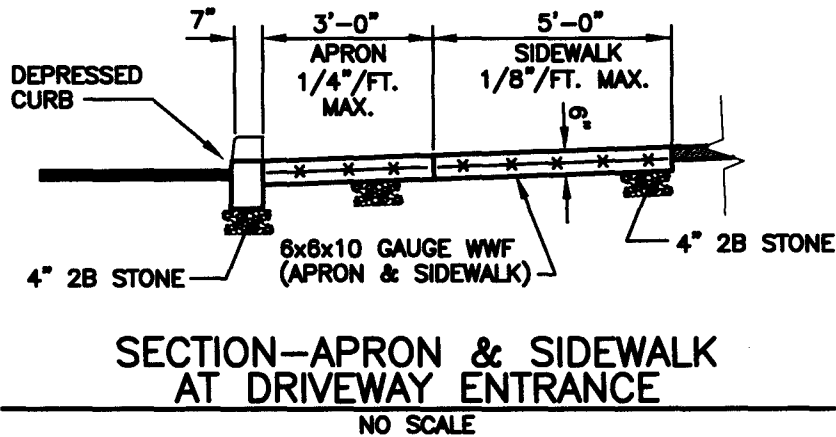
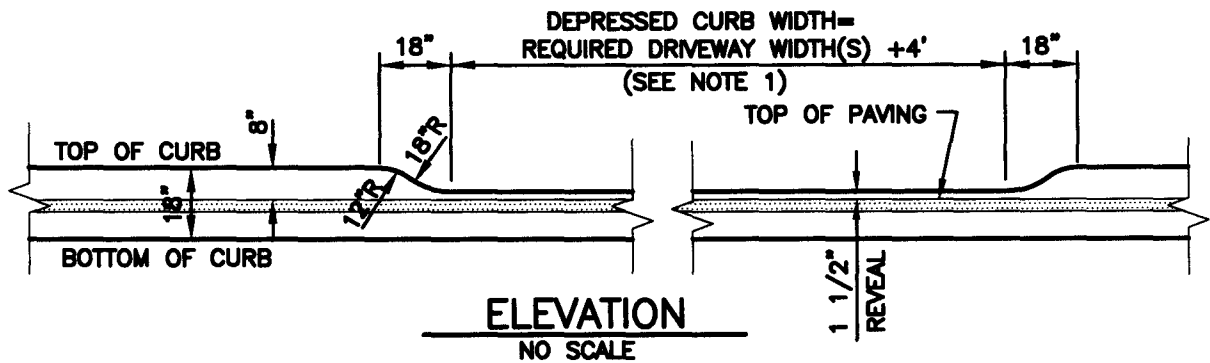
1. DRIVEWAY CROSS SECTION SHALL BE IN ACCORDANCE WITH THE DRIVEWAY REQUIREMENTS IDENTIFIED IN THE TOWNSHIP'S DRIVEWAY ORDINANCE.
2. 1/2" PREMOLDED EXPANSION JOINT SHALL BE PROVIDED BETWEEN THE CONCRETE APRON AND SIDEWALK AND BETWEEN THE CONCRETE APRON AND CURB.




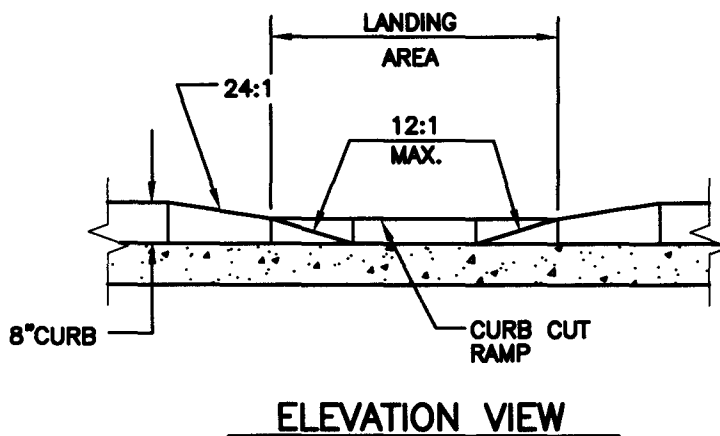
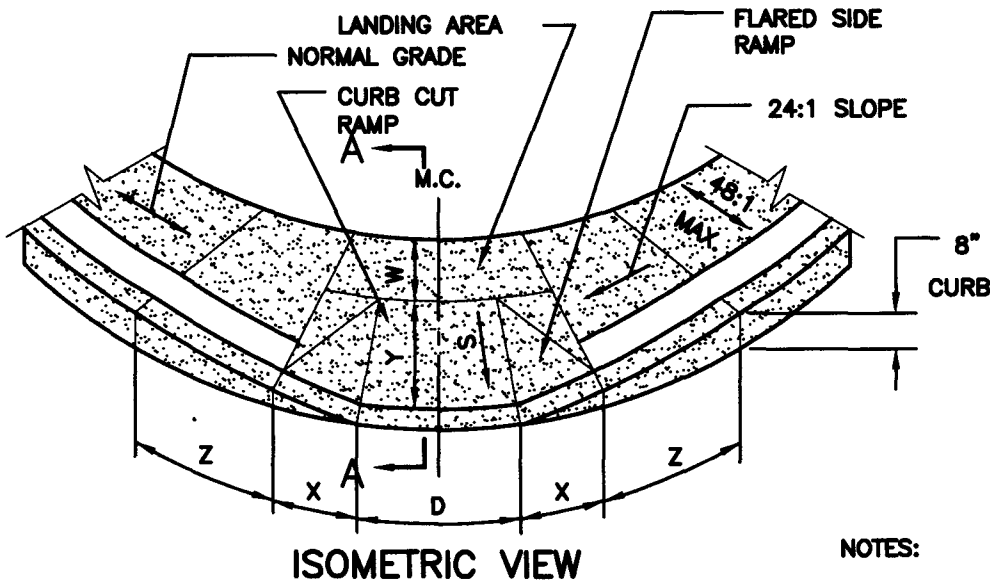
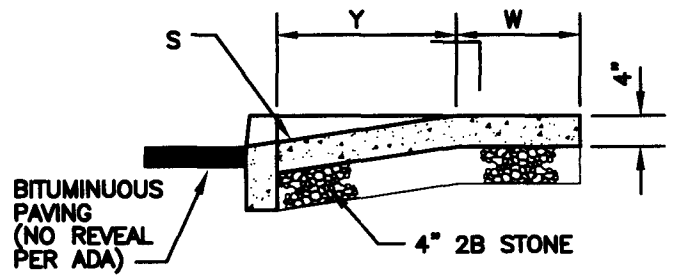
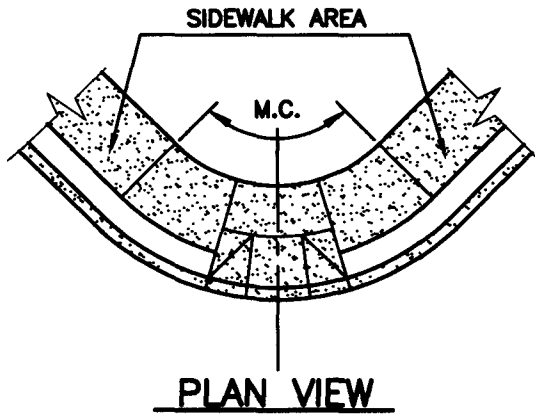
		EAST COVENTRY TOWNSHIP STANDARD DETAIL	 ARRO Consulting, Inc. Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
1	2/13/04	DRIVEWAY DETAIL- ADJACENT DWELLING UNITS W/ CONNECTED GARAGES	DATE: SEPTEMBER 2002
REVISION	DATE		DETAIL: 7



		<div>EAST COVENTRY TOWNSHIP</div> <div>STANDARD DETAIL</div>	<div><div>ARRO Consulting, Inc.</div><div>Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303</div></div>
1	2/13/04	<div>CURB & SIDEWALK DETAILS</div>	DATE: SEPTEMBER 2002
REVISION	DATE		DETAIL: 8




		EAST COVENTRY TOWNSHIP STANDARD DETAIL	 ARRO Consulting, Inc. Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
1	2/13/04	DEPRESSED CURB & APRON	DATE: SEPTEMBER 2002
REVISION	DATE		DETAIL: 9



NOTES:

1. PROVIDE 1/2" EXPANSION JOINT MATERIAL WHERE CURB CUT RAMP ADJOINS ANY RIGID PAVEMENT, SIDEWALK OR STRUCTURE WITH THE TOP OF JOINT FILLER FLUSH WITH ADJACENT CONCRETE SURFACE.
2. DIMENSIONS AND SLOPES SHALL BE ADHERED TO UNLESS EXISTING CONDITIONS REQUIRE SPECIAL DESIGN BASED ON ROADWAY GRADES.
3. PROVIDE SLIP RESISTANT TEXTURE ON CURB CUT RAMP BY COURSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP. EXTEND TEXTURE THE FULL WIDTH AND LENGTH OF THE CURB CUT RAMP INCLUDING FLARED SIDE RAMPS.

		<div>EAST COVENTRY TOWNSHIP</div> <div>STANDARD DETAIL</div>	<div><div>ARRO Consulting, Inc.</div><div>Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303</div></div>
1	2/13/04	<div>CURB CUT RAMP DETAILS</div>	DATE: SEPTEMBER 2002
REVISION	DATE		DETAIL: 10

RISE OF RAMP	D	E	L	S	S _R	W	X	Y	Z
3"	3'-0"	5'-0"	3'-0"	8:1	12:1	3'-0"	3'-0"	2'-0"	10'-0"
3"	3'-0"	6'-0"	3'-0"	10:1	12:1	3'-6"	3'-0"	2'-6"	10'-0"
3"	3'-0"	7'-0"	3'-0"	12:1	12:1	4'-0"	3'-0"	3'-0"	10'-0"
4"	4'-0"	8'-0"	2'-0"	12:1	10:1	4'-0"	3'-6"	4'-0"	8'-0"
5"	4'-0"	9'-0"	-	12:1	10:1	4'-0"	4'-0"	5'-0"	6'-0"
6"	4'-0"	10'-0"	-	12:1	10:1	4'-0"	5'-0"	6'-0"	4'-0"
7"	4'-0"	11'-0"	-	12:1	10:1	4'-0"	6'-0"	7'-0"	2'-0"
8"	4'-0"	12'-0"	-	12:1	10:1	4'-0"	*7'-0"	8'-0"	-


* 5'-0" on M.C. Side

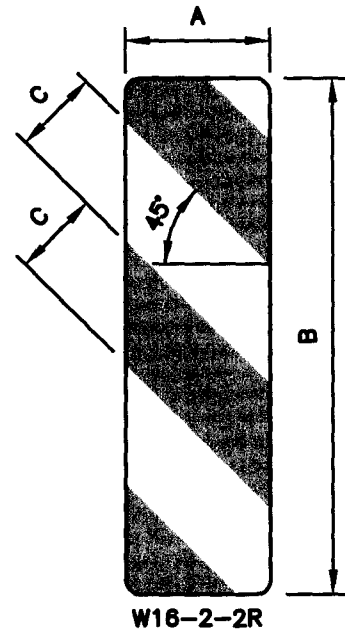
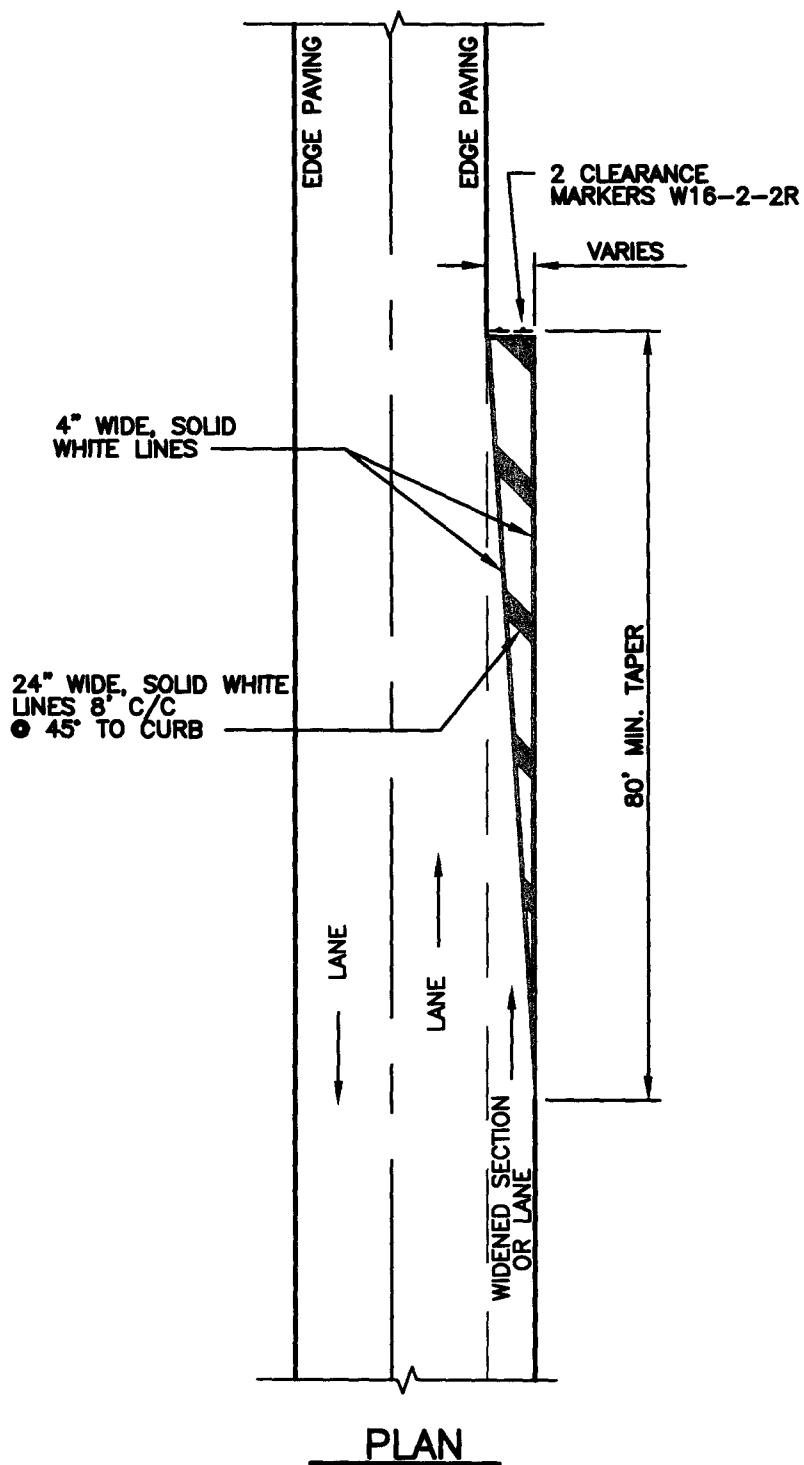
TYPICAL CURB CUT RAMP DIMENSIONAL ELEMENTS
FOR TYPE I CURB CUT RAMPS

DEFINITIONS

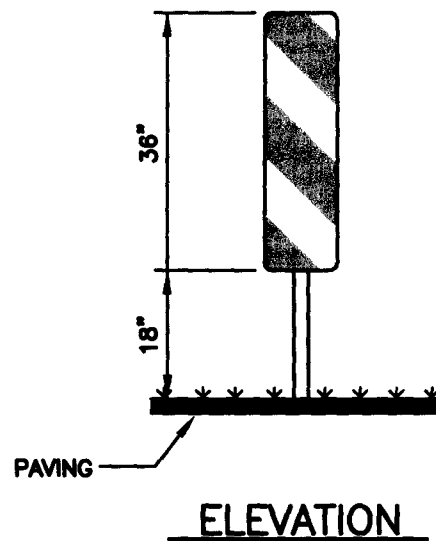
D = WIDTH OF CURB CUT RAMP.
E = WIDTH OF SIDEWALK SECTION.
L = LENGTH NEEDED TO MAINTAIN
12:1 SLOPE ALONG THE FACE
OF THE CURB.
S = SLOPE SIDE RAMP SLOPE.
S_R = FLARED SIDE RAMP SLOPE.


W = WIDTH OF LANDING AREA.
X = LENGTH NEEDED TO MAINTAIN
SELECTED SLOPE ALONG THE
FACE OF THE CURB.
Y = LENGTH OF CURB CUT RAMP.
Z = LENGTH NEEDED TO MAINTAIN
24:1 SLOPE ON CURB AND
SIDEWALK AREAS.

		EAST COVENTRY TOWNSHIP	STANDARD DETAIL	 ARRO Consulting, Inc. Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
		CURB CUT RAMP DIMENSIONS		DATE: SEPTEMBER 2002
1	2/13/04			DETAIL: 11
REVISION	DATE			



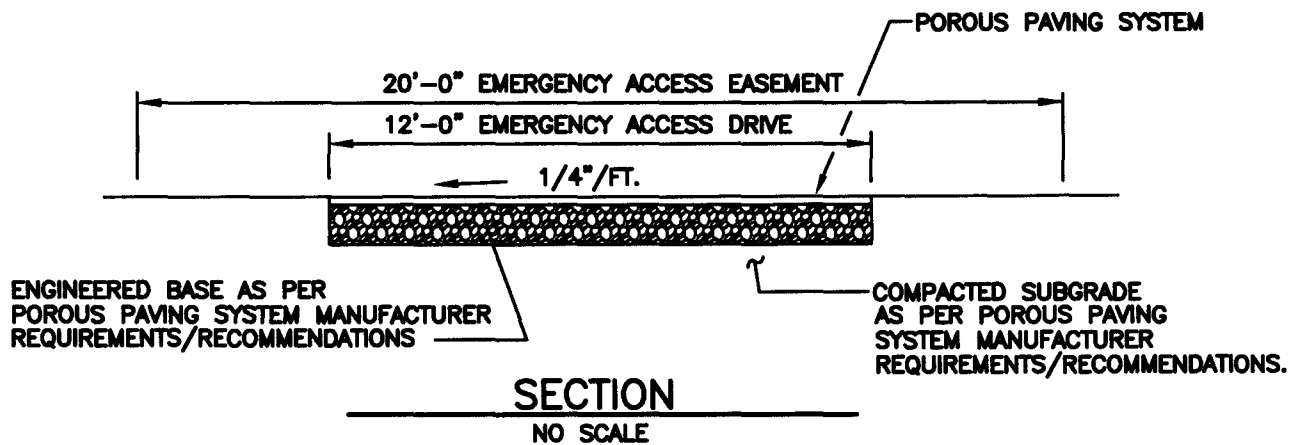
SIGN SIZE	DIMENSIONS		
	A	B	C
18"x36"	18"	36"	4" TO 6 1/2"



		EAST COVENTRY TOWNSHIP STANDARD DETAIL	 ARRO Consulting, Inc. Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19488 Tel 610.495.0303
1	2/13/04	END OF LANE MARKER	DATE: SEPTEMBER 2002
REVISION	DATE		DETAIL: 12

GENERAL NOTES:

1. TO BE UTILIZED FOR "CROSS-COUNTRY" RUNS THROUGH LAWN/AGRICULTURAL AREAS.
2. NO PLANTINGS OR OBSTRUCTIONS SHALL BE ALLOWED WITHIN THE EMERGENCY ACCESS EASEMENT.
3. REFER TO SECTION 13 FOR POROUS PAVING SYSTEM SPECIFICATIONS.



		EAST COVENTRY TOWNSHIP	 ARRO Consulting, Inc. Suite 100, 649 North Lewis Road Limerick, Pennsylvania 19468 Tel 610.495.0303
2	11/21/06	STANDARD DETAIL	DATE: SEPTEMBER 2002
1	2/13/04		
REVISION	DATE	EMERGENCY ACCESS DRIVES	DETAIL: 13

APPENDIX 2

As-Built Plan Requirements

EAST COVENTRY TOWNSHIP

AS-BUILT PLAN REQUIREMENTS

1. The developer shall submit As-Built Plans to the Township for review and approval at the end of construction or currently with an offer of dedication to the Township, whichever occurs later.
2. The following is a list of items that shall be provided and/or shown on the As-Built Plans:
 - a. Plan Scale: no smaller than 1" = 50 ft.
 - b. Sheet size: 24" x 36" (larger drawings will not be accepted)
 - c. Projection and Datum: Regardless of the projection and datum utilized for the approved subdivision and/or land development plan, As-Built Plans shall be projected in the State Plane Pennsylvania South Coordinate System, NAD83, utilizing the National Geodetic Vertical Datum of 1988 for consistency with Chester County GIS (Geographic Information System) data.
 - d. Information to be shown:
 - 1) Projection (coordinate system), datum, and benchmark location and elevation.
 - 2) Street cartway and width, including curb and/or shoulder, right-of-way with widths dimensioned and Horizontal and Vertical curve data, transitions for the curb and cartway, and street grades along centerlines.
 - 3) Sidewalk including width and all handicap ramps.
 - 4) Driveway locations and widths.
 - 5) Curb with elevations on P.C. and P.T. at intersections.
 - 6) Street monuments with elevations.
 - 7) Public utility lines (water, gas, electric, cable, telephone, etc.); or, PA One Call serial number and date (construction phase notification) if as-built utility line information is not available.
 - 8) Location of all storm sewer manholes, inlets, endwalls, storm sewers including length of line, size of line, slope of line and material of line, and top and invert elevation of each manhole, inlet and endwall.
 - 9) Location of all fire hydrants.
 - 10) Location of all sanitary sewer manholes, and top of rim and invert elevation(s) of each manhole; gravity sewer mains including length of line, size of line, slope of line, and material of line; sewer laterals, lateral lengths, and depth of all lateral ends; force mains, including size, material of line and depth below finished grade; low-pressure force mains, including size, material of line and depth below finished grade; pumping stations, including site plan identifying all structures and yard piping, and structural and mechanical plans and sections of the pumping station.

- 11) Size (volume) by contours of stormwater basins.
 - 12) Type and elevation(s) of stormwater basin outlet(s).
 - 13) Width and elevation of stormwater basin emergency spillway.
 - 14) Width and elevation of the top of stormwater basin berm.
 - 15) Street lights and signs.
 - 16) Street address for each lot.
- e. One (1) set of reproducible (Mylar) and three (3) sets of paper prints of the As-Built Plans are to be furnished after the plans have been reviewed and approved. Plans shall also be delivered to the Township on compact disc as follows:
- 1) Digital spatial data shall be fully compatible with AutoCAD 2004, or more recent version. Files must be provided in the AutoCAD data exchange (.dxf) format. ArcInfo data submission is acceptable in the .e00 format providing the data is determined to be acceptable. All submitted data is subject to review and approval prior to acceptance.
 - 2) The data shall be provided in an uncompressed format on a standard compact disc compatible with the Microsoft Windows 98, 00, XP and NT operating systems.
- f. The reproducible and paper plans shall be signed and sealed by the licensed Professional Engineer and/or Professional Land Surveyor registered in the Commonwealth of Pennsylvania responsible for their preparation.

Notes:

- (1) The Engineer may require additional information if deemed necessary.
- (2) All Public Improvements shown on the approved Final Subdivision and/or Land Development Plan shall be provided on the As-Built Plans.

APPENDIX 3

Typical Preconstruction Conference Agenda

EAST COVENTRY TOWNSHIP

TYPICAL PRECONSTRUCTION CONFERENCE AGENDA

PROJECT NAME: _____

DEVELOPER NAME: _____

CONFERENCE DATE: _____

1. Introduction
2. Applicable Construction-Related Documents & Hierarchy Thereof
 - a. Development Agreement, Financial Security Agreement and other applicable agreements between Township and developer
 - b. Township's Technical Specifications for Construction of Sanitary Sewers and Appurtenances bearing a revision date of _____ (the "Sewer Specs"), if applicable
 - c. Approved final subdivision and land development plan (the "Plans") prepared by _____, consisting of drawings as listed in Exhibit 'A' of the Development Agreement, a copy of which is attached
 - d. Township's Standard Construction and Material Specifications for Public Improvements bearing a revision date of _____ (the "Public Improvements Specs")
3. Contact Information of Key Personnel
4. Chester County Conservation District Agenda Discussion
5. Township's NPDES Phase II Stormwater Permit – MS4 Program
6. Communications
 - a. All correspondence to be submitted to attention of Township Manager
 - b. Technical questions and inspection notifications may be made directly to Township Engineer's office
 - c. Shop submittals may be submitted directly to Township Engineer's office
7. Submittals
 - a. Developer/contractor should submit minimum of 3 sets, plus however many sets the developer/contractor wishes to have returned
 - b. Township Engineer will retain 2 sets of reviewed submittals, forward 1 set to Township, and return balance to contractor

8. Work schedule

- a. Anticipated clearing/E&S/earthmoving start date
- b. Anticipated improvements start date
- c. Per Section __ of Development Agreement, improvements must be completed by _____, or an extension must be requested in writing
- d. Days and hours of operation
 - 1) Acceptable working hours are 7:00 AM – 5:00 PM Monday through Friday
 - 2) Contractor must obtain permission from Township Manager each time work is proposed to continue after 5:00 PM, and each time work is proposed for a Saturday
 - 3) Equipment/material loading and unloading, and vehicles that beep, are not permitted prior to 7:00 AM
 - 4) Refer to Township's Noise Ordinance (§_____ of _____ Zoning Ordinance)

9. Construction Requirements

- a. General – Refer to Public Improvements Specs
 - 1) Inspection requirements
 - a) Items requiring inspection
 - b) Notification requirement – 3 business days minimum
 - c) No inspections conducted on weekends and Federal holidays unless agreed to in advance by Township Engineer – plan accordingly
 - 2) Materials testing requirements
 - 3) Entire project site must be kept in continual compliance with Township's adopted property maintenance code
 - 4) Traffic Control & Safety
 - a) Traffic control devices and safety for Township roads shall conform to PADOT Pub. 203 (latest edition) requirements
 - b) For Township roads, a traffic control plan (including road closure and detour plan when applicable) shall be submitted to the Township as a shop submittal for review and approval
- b. Project-Specific Construction Requirements
 - 1) Written approval from Township will be required for each driveway that is proposed to be relocated from position as shown on Plans
 - 2) Other

- c. Procedure for Field Changes
 - 1) Developer to submit all requests for Field Changes in writing to Township
 - 2) Township Manager and Township Engineer will collectively decide if requested change is major or minor in nature
 - 3) If requested change is deemed minor, Township Manager or Township Engineer will authorize requested change in writing
 - 4) If requested change is deemed major, request will be brought before Board of Supervisors for consideration and appropriate action
 - d. Developer and/or contractor is responsible for relaying house number information to utilities and local Post Office
10. Construction Escrow - Request and Release Procedure
- a. Proper Request Submittal
 - 1) Request to be submitted to attention of Township Manager
 - 2) All requests to be numbered sequentially
 - b. Township authorizes Engineer to perform inspection relative to escrow release request
 - c. Engineer performs inspection and makes recommendation to Township
 - d. Township releases appropriate escrow amount at a regularly scheduled public meeting
11. Final Inspection & Final Release
- a. Developer to submit letter to Township offering dedication of improvements, and requesting final inspection and review of As-Built Plan and legal descriptions
 - b. As-Built Plan to be submitted concurrently with Offer of Dedication letter – see Appendix 2 of Public Improvements Specs for As-Built Plan requirements
 - c. Legal descriptions for rights-of-way and/or easements to be dedicated to the Township to be submitted concurrently with Offer of Dedication letter
 - d. Township authorizes Engineer to perform final inspection relative to Offer of Dedication
 - e. Engineer performs inspection, reviews As-Built Plan and legal descriptions, and develops a comprehensive punchlist of items to be addressed
 - f. Developer successfully addresses punchlist items
 - g. Township Engineer recommends that Township accept offer of dedication, and recommends amount at which maintenance bond be established
 - h. Final escrow released after Township accepts dedication
12. Q/A Session
13. Adjournment
- Meeting minutes will be prepared by Township Engineer and distributed to attendees.